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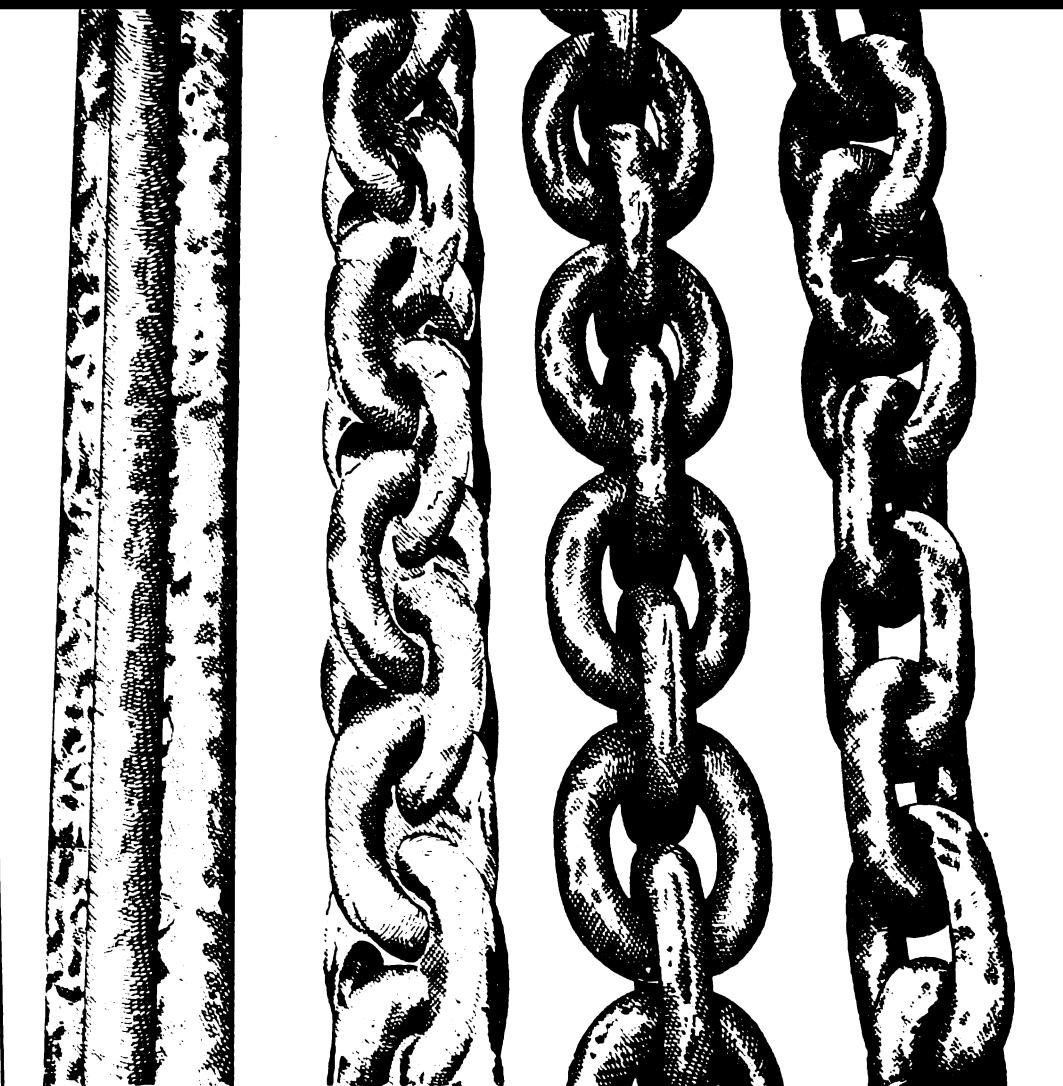
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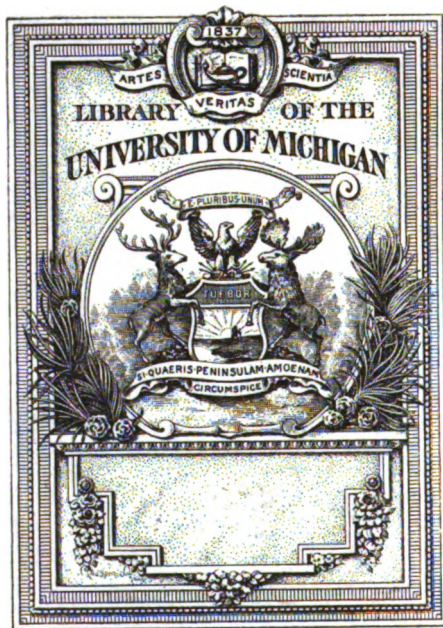
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*Monthly consular and  
trade reports*

United States. Bureau of Manufactures, United  
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# CONSULAR REPORTS.

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COMMERCE, MANUFACTURES, ETC.

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## VALUES OF FOREIGN COINS.

The following statements show the valuation of foreign coins, as given by the Director of the United States Mint and published by the Secretary of the Treasury, in compliance with the first section of the act of March 3, 1873, viz: "That the value of foreign coins, as expressed in the money of account of the United States, shall be that of the pure metal of such coin of standard value," and that "the value of the standard coins in circulation of the various nations of the world shall be estimated annually by the Director of the Mint, and be proclaimed on the 1st day of January by the Secretary of the Treasury."

In compliance with the foregoing provisions of law, annual statements were issued by the Treasury Department, beginning with that issued on January 1, 1874, and ending with that issued on January 1, 1890. Since that date, in compliance with the act of October 1, 1890, these valuation statements have been issued quarterly, beginning with the statement issued on January 1, 1891.

These estimates "are to be taken (by customs officers) in computing the value of all foreign merchandise made out in any of said currencies, imported into the United States."

The following statements, running from January 1, 1874, to April 1, 1894, have been prepared to assist in computing the proper values in American money of the trade, prices, values, wages, etc., of and in foreign countries, as given in consular and other reports. The series of years are given so that computations may be made for each year in the proper money values of such year. In hurried computations, the reductions of foreign currencies into American currency, no matter for how many years, are too often made on the bases of latest valuations. When it is taken into account that the ruble of Russia, for instance, has fluctuated from 77.17 cents in 1874 to 37.2 cents in April, 1894, such computations are wholly misleading. All computations of values, trade, wages, prices, etc., of and in the "fluctuating-currency countries" should be made in the values of their currencies in each year up to and including 1890, and in the quarterly valuations thereafter.

To meet typographical requirements, the quotations for the years 1876, 1877, 1879, 1881, and 1882 are omitted, these years being selected as showing the least fluctuations when compared with years immediately preceding and following.

To save unnecessary repetition, the estimates of valuations are divided into three classes, viz: (A) countries with fixed currencies, (B) countries with fluctuating currencies, and (C) quarterly valuations of fluctuating currencies.

## A.—Countries with fixed currencies.

Countries.	Standard.	Monetary unit.	Value in terms of United States gold.	Coins.
Argentine Republic*....	Gold and silver...	Peso .....	\$0.96, 5	Gold—Argentine (\$4.82, 4) and ½ Argentine; silver—peso and divisions.
Austria-Hungary†.....	Gold .....	Crown.....	.20, 3	Gold—20 crowns (\$4.05, 2) and 10 crowns.
Belgium.....	Gold and silver...	Franc.....	.19, 3	Gold—10 and 20 franc pieces; silver—5 francs.
Brazil.....	Gold .....	Milreis.....	.54, 6	Gold—5, 10, and 20 milreis; silver—½, 1, and 2 milreis.
British North America (except Newfoundland).	do.....	Dollar.....	1.00	
Chile‡.....	Gold and silver...	Peso .....	.91, 2	Gold—escudo (\$1.82, 4), doubloon (\$4.56, 1), and condor (\$9.12, 8); silver—peso and divisions.
Cuba.....	do.....	do.....	.92, 6	Gold—doubloon (\$5.01, 7); silver—peso.
Denmark.....	Gold .....	Crown.....	.26, 8	Gold—10 and 20 crowns.
Egypt.....	do.....	Pound (100 piasters).	4.94, 3	Gold—10, 20, 50, and 100 piasters; silver—1, 2, 10, and 20 piasters.
Finland.....	do.....	Mark.....	.19, 3	Gold—10 and 20 marks (\$1.93 and \$3.85, 9).
France.....	Gold and silver...	Franc.....	.19, 3	Gold—5, 10, 20, 50, and 100 francs; silver—5 francs.
Germany.....	Gold .....	Mark.....	.23, 8	Gold—5, 10, and 20 marks.
Great Britain.....	do.....	Pound sterling.....	4.86, 6½	Gold—sovereign (pound sterling) and half sovereign.
Greece.....	Gold and silver...	Drachma.....	.19, 3	Gold—5, 10, 20, 50, and 100 drachmas; silver—5 drachmas.
Haiti.....	do.....	Gourde.....	.96, 5	Silver—gourde.
Italy.....	do.....	Lira.....	.19, 3	Gold—5, 10, 20, 50, and 100 lire; silver—5 lire.
Liberia.....	Gold .....	Dollar .....	1.00	
Netherlands§.....	Gold and silver...	Florin.....	.40, 2	Gold—10 florins; silver—½, 1, and 2½ florins.
Newfoundland.....	Gold .....	Dollar.....	1.01, 4	Gold—½2 (\$2.02, 7).
Portugal.....	Gold .....	Milreis.....	1.08	Gold—1, 2, 5, and 10 milreis.
Spain.....	Gold and silver...	Peseta.....	.19, 3	Gold—25 pesetas; silver—5 pesetas.
Sweden and Norway...	Gold .....	Crown.....	.26, 8	Gold—10 and 20 crowns.
Switzerland.....	Gold and silver...	Franc.....	.19, 3	Gold—5, 10, 20, 50, and 100 francs; silver—5 francs.
Turkey.....	Gold .....	Piaster.....	.04, 4	Gold—25, 50, 100, 200, and 500 piasters.
Venezuela.....	Gold and silver...	Bolivar.....	.19, 3	Gold—5, 10, 20, 50, and 100 bolivars; silver—5 bolivars.

\* In 1874 and 1875 the gold standard prevailed in the Argentine Republic. Its currency does not appear in the statements again until 1883, when the double standard prevailed, and the peso attained a fixed value of 96.5 cents.

† On reference to the table of "fluctuating currencies," it will be seen that Austria had the silver standard up to and including the quarter ending July 1, 1892. The next quarter (October 1) inaugurated the gold standard (see note under table of "fluctuating currencies").

‡ The gold standard prevailed in Chile until January 1, 1890. The value of the peso has been the same under both standards.

§ The Netherlands florin, as will be seen in the "fluctuating" table, became fixed in value (40.2 cents) in 1880.

## B.—Countries with fluctuating currencies, 1874-'90.

Countries.	Standard.	Monetary unit.	Value in terms of the United States gold dollar on January 1—					
			1874.	1875.	1878.	1880.	1883.	1884.
Austria-Hungary*	Silver.....	Florin.....	\$0.47,6	\$0.45,3	\$0.45,3	\$0.41,3	\$0.40,1	\$0.39,8
Bolivia.....	do.....	Dollar until 1880; boliviano thereafter.	.96,5	.96,5	.96,5	.83,6	.81,2	.80,6
Central America.....	do.....	Peso.....	.96,5	.91,8	.91,8	.83,6		
China.....	Silver.....	Haikwan tael.....	1.61	1.61				
Colombia.....	do.....	Peso.....	.96,5	.96,5	.96,5	.83,6	.81,2	.80,6
Ecuador.....	do.....	do.....	.96,5	.91,8	.91,8	.83,6	.81,2	.80,6
Egypt†	Gold.....	Pound (100 piasters).			4.97,4	4.97,4	4.90	4.90
India.....	Silver.....	Rupee.....	.45,8	.43,6	.43,6	.39,7	.38,6	.38,3
Japan.....	{ Gold..... Silver..... }	{ Yen.....	{ .99,7 .99,7 }	{ .99,7 .99,7 }	{ .99,7 .99,7 }	{ .99,7 .99,7 }	.87,6	.86,9
Mexico.....	do.....	Dollar.....	1.04,7½	.99,8	.99,8	.90,9	.88,2	.87,5
Netherlands ‡	Gold and silver.	Florin.....	.40,5	.38,5	.38,5	.40,2		
Peru.....	Silver.....	Sol.....	.92,5	.91,8	.91,8	.83,6	.81,2	.80,6
Russia.....	do.....	Ruble.....	.77,17	.73,4	.73,4	.66,9	.65	.64,5
Tripoli.....	do.....	Mahbub of 20 piasters.	.87,09	.82,9	.82,9	.74,8	.73,3	.72,7

Countries.	Standard.	Monetary unit.	Value in terms of the United States gold dollar on January 1—					
			1885.	1886.	1887.	1888.	1889.	1890.
Austria-Hungary*	Silver.....	Florin.....	\$0.39,3	\$0.37,1	\$0.35,9	\$0.34,5	\$0.33,6	\$0.42
Bolivia.....	do.....	Dollar until 1880; boliviano thereafter.	.79,5	.75,1	.72,7	.69,9	.68	.85
Central America.....	do.....	Peso.....				.69,9	.68	.85
Colombia.....	do.....	do.....	.79,5	.75,1	.72,7	.69,9	.68	.85
Ecuador.....	do.....	do.....	.79,5	.75,1	.72,7	.69,9	.68	.85
Egypt†	Gold.....	Pound (100 piasters).	4.50	4.90	4.94,3	4.94,3	4.94,3	4.93,3
India.....	Silver.....	Rupee.....	.37,8	.35,7	.34,6	.33,2	.32,3	.40,4
Japan.....	{ Gold..... Silver..... }	{ Yen.....	{ .85,8 .86,4 }	{ .81 .81,6 }	{ .99,7 .78,4 }	{ .99,7 .75,3 }	{ .99,7 .73,4 }	{ .99,7 .91,7 }
Mexico.....	do.....	Dollar.....	.86,4	.81,6	.79	.75,9	.73,9	.92,3
Peru.....	Silver.....	Sol.....	.79,5	.75,1	.72,7	.69,9	.68	.85
Russia.....	do.....	Ruble.....	.63,6	.60,1	.58,2	.55,9	.54,4	.68
Tripoli.....	do.....	Mahbub of 20 piasters.	.71,7	.67,7	.65,6	.63	.61,4	.76,7

\* The silver standard prevailed in Austria-Hungary up to 1832. The law of August 2 of that year (see CONSULAR REPORTS, No. 147, p. 623) established the gold standard.

† The Egyptian pound became fixed in value at \$4.94,3 in 1887.

‡ The Netherlands florin fluctuated up to the year 1880, when it became fixed at 40.2 cents.

## C.—Quarterly valuations of fluctuating currencies, 1891-'94.

Countries.	Monetary unit.	1891.				1892.			
		Jan. 1.	April 1.	July 1.	Oct. 1.	Jan. 1.	April 1.	July 1.	Oct. 1.
Austria-Hungary*	Gold crown.....								\$0. 20, 3
	Silver florin.....	\$0. 38, 1	\$0. 36, 3	\$0. 36, 3	\$0. 35, 7	\$0. 34, 1	\$0. 32, 8	\$0. 32	
Bolivia.....	Silver boliviano.....	.77, 1	.73, 5	.73, 6	.72, 3	.69, 1	.66, 5	.64, 9	.61, 6
Central America.....	Silver peso.....	.77, 1	.73, 5	.73, 6	.72, 3	.69, 1	.66, 5	.64, 9	.61, 6
China†.....	Shanghai tael.....	1. 13, 9	1. 08, 5	1. 08, 7	1. 06, 8	1. 02, 1	.98, 2	.95, 8	.91
	Haikwan tael.....	1. 27	1. 20, 9	1. 21	1. 18, 9	1. 13, 7	1. 09, 3	1. 06, 7	1. 01, 3
Colombia.....	Silver peso.....	.77, 1	.73, 5	.73, 6	.72, 3	.69, 1	.66, 5	.64, 9	.61, 6
Ecuador.....	do.....	.77, 1	.73, 5	.73, 6	.72, 3	.69, 1	.66, 5	.64, 9	.61, 6
India.....	Silver rupee.....	.3, 6	.34, 9	.35	.34, 3	.32, 8	.31, 6	.30, 8	.29, 3
Japan‡.....	Silver yen.....	.83, 1	.79, 2	.79, 3	.77, 9	.74, 5	.71, 6	.69, 9	.66, 4
Mexico.....	Silver dollar.....	.83, 7	.80	.80	.78, 5	.75	.72, 2	.70, 4	.66, 9
Peru.....	Silver sol.....	.77, 1	.73, 5	.73, 6	.72, 3	.69, 1	.66, 5	.64, 9	.61, 6
Russia§.....	Silver ruble.....	.61, 7	.58, 8	.58, 8	.57, 8	.55, 3	.53, 1	.51, 9	.49, 2
Tripoli.....	Silver mahbub.....	.62, 5	.66, 3	.66, 4	.65, 2	.62, 3	.60	.58, 5	.55, 5
Venezuela ¶.....	Silver bolivar.....	.15, 4	.14, 7	.14, 7	.14, 5	.13, 8	.13, 3	.13	.12, 3

Countries.	Monetary unit.	1893.				1894.			Jan. 1, 1895.
		Jan. 1.	April 1.	July 1.	Oct. 1.	Jan. 1.	April 1.	Oct. 1.	
Bolivia.....	Silver boliviano.....	\$0. 61, 3	\$0. 61	\$0. 60, 4	\$0. 53, 1	\$0. 51, 6	\$0. 46, 5	\$0. 46, 4	\$0. 45, 5
Central America.....	Silver peso.....	.61, 3	.61	.60, 4	.53, 1	.51, 6	.46, 5	.46, 4	.45, 5
	Shanghai tael.....	.90, 6	.90, 1	.89, 2	.78, 4	.76, 2	.68, 6	.68, 5	.67, 3
China†.....	Haikwan tael.....	1. 01	1. 00, 4	.99, 4	.87, 4	.84, 9	.76, 5	.76, 3	.74, 9
	Tien-Tsin tael.....							.72, 7	.71, 4
	Chefoo tael.....							.71, 7	.70, 4
Colombia.....	Silver peso.....	.61, 3	.61	.60, 4	.53, 1	.51, 6	.46, 5	.46, 4	.45, 5
Ecuador.....	do.....	.61, 3	.61	.60, 4	.53, 1	.51, 6	.46, 5	.46, 4	.45, 5
India.....	Silver rupee.....	.29, 2	.29	.28, 7	.25, 2	.24, 5	.22, 1	.22	.21, 6
Japan‡.....	Silver yen.....	.66, 1	.65, 8	.65, 1	.57, 3	.55, 6	.50, 1	.50	.49, 1
Mexico.....	Silver dollar.....	.66, 6	.66, 2	.65, 6	.57, 7	.56	.50, 5	.50, 4	.49, 5
Peru.....	Silver sol.....	.61, 3	.61	.60, 4	.53, 1	.51, 6	.46, 5	.46, 4	.45, 5
Russia§.....	Silver ruble.....	.49, 1	.48, 8	.48, 3	.42, 5	.41, 3	.37, 2	.37, 1	.36, 4
Tripoli.....	Silver mahbub.....	.55, 3	.55	.54, 5	.47, 9	.46, 5	.41, 9	.41, 8	.41, 1

\* Austria-Hungary had the silver standard up to August, 1892 (see note to "fluctuating" table B).

† China (silver). The Haikwan tael is the customs tael, and the Shanghai tael that used in trade. Consul-General Denny (CONSULAR REPORTS No. 43, p. 516) says: "The value of the tael varies in the different ports of China, and every port has two taels, one being the Government, or Haikwan, tael, in which all duties have to be paid, and the other the market tael, the former exceeding the latter by some 11 per cent."

‡ Gold is the nominal standard in Japan, but silver is practically the standard. The fixed value of the gold yen is 99.7 cents.

§ The gold ruble is valued at 77.2 cents. Silver is the nominal standard, but paper is the actual currency, and its depreciation is measured by the gold standard.

¶ The Venezuelan bolivar became fixed in value (19.3 cents) on January 1, 1892.

## FOREIGN WEIGHTS AND MEASURES.

The following table embraces only such weights and measures as are given from time to time in CONSULAR REPORTS and in Commercial Relations:

*Foreign weights and measures, with American equivalents.*

Denominations.	Where used.	American equivalent.
Almude.....	Portugal.....	4.422 gallons.
Ardeb.....	Egypt.....	7.6907 bushels.
Are.....	Metric.....	0.02471 acre.
Arobc.....	Paraguay.....	25 pounds.
Arratel or libra.....	Portugal.....	1.011 pounds.
Arroba (dry).....	Argentine Republic.....	25.3175 pounds.
Do.....	Brazil.....	32.38 pounds.
Do.....	Cuba.....	25.3664 pounds.
Do.....	Portugal.....	32.38 pounds.
Do.....	Spain.....	25.36 pounds.
Do.....	Venezuela.....	25.4024 pounds.
Arroba (liquid).....	Cuba, Spain, and Venezuela.....	4.263 gallons.
Arshine.....	Russia.....	28 inches.
Arshine (square).....	do.....	5.44 square feet.
Artel.....	Morocco.....	1.12 pounds.
Baril.....	Argentine Republic and Mexico.....	20.0787 gallons.
Barrel.....	Malta (customs).....	11.4 gallons.
Do.....	Spain (raisins).....	100 pounds.
Berkover.....	Russia.....	361.12 pounds.
Bongkal.....	India.....	832 grains.
Bonw.....	Sumatra.....	7.0965 square meters.
Bu.....	Japan.....	0.1 inch.
Butt (wine).....	Spain.....	140 gallons.
Caffiso.....	Malta.....	5.4 gallons.
Candy.....	India (Bombay).....	529 pounds.
Do.....	India (Madras).....	500 pounds.
Cantar.....	Morocco.....	113 pounds.
Do.....	Syria (Damascus).....	575 pounds.
Do.....	Turkey.....	124.7036 pounds.
Cantaro (Cantar).....	Malta.....	175 pounds.
Carga.....	Mexico and Salvador.....	300 pounds.
Catty.....	China.....	1.333½ (1¼) pounds.
Do.....	Japan.....	1.31 pounds.
Do.....	Java, Siam, Malacca.....	1.35 pounds.
Do.....	Sumatra.....	2.12 pounds.
Centaro.....	Central America.....	4.2631 gallons.
Centner.....	Bremen and Brunswick.....	117.5 pounds.
Do.....	Darmstadt.....	110.24 pounds.
Do.....	Denmark and Norway.....	110.11 pounds.
Do.....	Nuremberg.....	112.43 pounds.
Do.....	Prussia.....	113.44 pounds.
Do.....	Sweden.....	93.7 pounds.
Do.....	Vienna.....	123.5 pounds.
Do.....	Zollverein.....	110.24 pounds.
Do.....	Double or metric.....	220.46 pounds.
Chih.....	China.....	14 inches.
Coyan.....	Sarawak.....	3.098 pounds.
Do.....	Siam (Koyan).....	2.667 pounds.



*Foreign weights and measures, with American equivalents—Continued.*

Denominations.	Where used.	American equivalent.
Cuadra.....	Argentine Republic.....	4 2 acres.
Do.....	Paraguay.....	78.9 yards.
Do.....	Paraguay (square).....	8.077 square feet.
Do.....	Uruguay.....	Nearly 2 acres.
Cubic meter.....	Metric.....	35.3 cubic feet.
Cwt. (hundredweight).....	British.....	112 pounds.
Dassiatine.....	Russia.....	2.6997 acres.
Do.....	Spain.....	1.599 bushels.
Drachme.....	Greece.....	Half ounce.
Dun.....	Japan.....	1 inch.
Egyptian weights and measures.....	(See CONSULAR REPORTS No. 144.)	
Fanega (dry).....	Central America.....	1.5745 bushels.
Do.....	Chile.....	2.575 bushels.
Do.....	Cuba.....	1.599 bushels.
Do.....	Mexico.....	1.54728 bushels.
Do.....	Morocco.....	Strike fanega, 70 lbs. full fanega, 118 lbs.
Do.....	Uruguay (double).....	7.776 bushels.
Do.....	Uruguay (single).....	3.888 bushels.
Do.....	Venezuela.....	1.599 bushels.
Fanega (liquid).....	Spain.....	16 gallons.
Feddan.....	Egypt.....	1.03 acres.
Frail (raisins).....	Spain.....	50 pounds.
Frasco.....	Argentine Republic.....	2.5096 quarts.
Do.....	Mexico.....	2.5 quarts.
Fuder.....	Luxemburg.....	264 17 gallons.
Garnice.....	Russian Poland.....	0.88 gallon.
Gram.....	Metric.....	15.432 grains.
Hectare.....	do.....	2.471 acres.
Hectoliter:		
Dry.....	do.....	2.838 bushels.
Liquid.....	do.....	26.417 gallons.
Joch.....	Austria-Hungary.....	1.422 acres.
Ken.....	Japan.....	4 yards.
Kilogram (kilo).....	Metric.....	2.2046 pounds.
Kilometer.....	do.....	0.621376 mile.
Klafter.....	Russia.....	216 cubic feet.
Kota.....	Japan.....	5.13 bushels.
Korree.....	Russia.....	3 5 bushels.
Last.....	Belgium and Holland.....	85.134 bushels.
Do.....	England (dry malt).....	82.52 bushels.
Do.....	Germany.....	2 metric tons (4,480 pounds).
Do.....	Prussia.....	112.29 bushels.
Do.....	Russian Poland.....	11.33 bushels.
Do.....	Spain (salt).....	4,760 pounds.
League (land).....	Paraguay.....	4,633 acres.
Li.....	China.....	2,115 feet.
Libra (pound).....	Castilian.....	7,100 grains (troy).
Do.....	Argentine Republic.....	1 0127 pounds.
Do.....	Central America.....	1.043 pounds.
Do.....	Chile.....	1.014 pounds.
Do.....	Cuba.....	1.0161 pounds.
Do.....	Mexico.....	1.01465 pounds.
Do.....	Peru.....	1.0143 pounds.
Do.....	Portugal.....	1.011 pounds.
Do.....	Uruguay.....	1.0143 pounds.
Do.....	Venezuela.....	1.0161 pounds.
Liter.....	Metric.....	1.0567 quarts.
Livre (pound).....	Greece.....	1.1 pounds.
Do.....	Guiana.....	1.0791 pounds.

*Foreign weights and measures, with American equivalents—Continued.*

Denominations.	Where used.	American equivalent.
Load.....	England (timber).....	Square, 50 cubic feet; unhewn, 40 cubic feet; inch planks, 600 super- ficial feet.
Manzana.....	Costa Rica.....	1½ acres.
Marc.....	Bolivia.....	0 507 pound.
Maund.....	India.....	82½ pounds.
Meter.....	Metric.....	39.37 inches.
Mil.....	Denmark.....	4.68 miles.
Do.....	Denmark (geographical).....	4.61 miles.
Morgen.....	Prussia.....	0.63 acre.
Oke.....	Egypt.....	2.7225 pounds.
Do.....	Greece.....	2.84 pounds.
Do.....	Hungary.....	3.0817 pounds.
Do.....	Turkey.....	2.85418 pounds.
Do.....	Hungary and Wallachia.....	2.5 pints.
Pic.....	Egypt.....	21¼ inches.
Picul.....	Borneo and Celebes.....	135.64 pounds.
Do.....	China, Japan, and Sumatra.....	133½ pounds.
Do.....	Java.....	135.1 pounds.
Do.....	Philippine Islands (hemp).....	139.45 pounds.
Do.....	Philippine Islands (sugar).....	140 pounds.
Pie.....	Argentine Republic.....	0.9478 foot.
Do.....	Castilian.....	0.91407 foot.
Pik.....	Turkey.....	27.9 inches.
Pood.....	Russia.....	36.112 pounds.
Pund (pound).....	Denmark and Sweden.....	1.102 pounds.
Quarter.....	Great Britain.....	8.252 bushels.
Do.....	London (coal).....	36 bushels.
Quintal.....	Argentine Republic.....	101.42 pounds.
Do.....	Brazil.....	130.06 pounds.
Do.....	Castile, Chile, Mexico, and Peru.....	101.61 pounds.
Do.....	Greece.....	123.2 pounds.
Do.....	Newfoundland (fish).....	112 pounds.
Do.....	Paraguay.....	100 pounds.
Do.....	Syria.....	125 pounds.
Do.....	Metric.....	220.46 pounds.
Rottle.....	Palestine.....	6 pounds.
Do.....	Syria.....	5¼ pounds.
Sagen.....	Russia.....	7 feet.
Salm.....	Malta.....	490 pounds.
Se.....	Japan.....	3.6 feet.
Scer.....	India.....	1 pound 13 ounces.
Shaku.....	Japan.....	10 inches.
Sho.....	do.....	1.6 quarts.
Standard (St. Petersburg).....	Lumber measure.....	165 cubic feet.
Stone.....	British.....	14 pounds.
Suerte.....	Uruguay.....	2,700 cuadras ( <i>see</i> cua- dra).
Tael.....	Cochin China.....	590.75 grains (troy).
Tan.....	Japan.....	0.25 acre.
To.....	do.....	2 pecks.
Ton.....	Space measure.....	40 cubic feet.
Tonde (cereals).....	Denmark.....	3.94783 bushels.
Tondeland.....	do.....	1.36 acres.
Tsubo.....	Japan.....	6 feet square.
Tsun.....	China.....	1.41 inches.
Tunna.....	Sweden.....	4 5 bushels.
Tunnland.....	do.....	1.22 acres.
Vara.....	Argentine Republic.....	34.1208 inches.
Do.....	Castile.....	0.914117 yard.
Do.....	Central America.....	38.874 inches.

*Foreign weights and measures, with American equivalents—Continued.*

Denominations	Where used.	American equivalent.
Vara.....	Chile and Peru.....	33.367 inches.
Do.....	Cuba.....	33.384 inches.
Do.....	Curaçao.....	33.375 inches.
Do.....	Mexico.....	33 inches.
Do.....	Paraguay.....	34 inches.
Do.....	Venezuela.....	33.384 inches.
Vedro.....	Russia.....	2.707 gallons.
Vergees.....	Isle of Jersey.....	71.1 square rods.
Verst.....	Russia.....	0.663 mile.
Vloeka.....	Russian Poland.....	41.98 acres.

## METRIC WEIGHTS AND MEASURES.

*Metric weights.*

Milligram ( $\frac{1}{1000}$  gram) equals 0.0154 grain.  
 Centigram ( $\frac{1}{100}$  gram) equals 0.1543 grain.  
 Decigram ( $\frac{1}{10}$  gram) equals 1.5432 grains.  
 Gram equals 15.432 grains.  
 Decagram (10 grams) equals 0.3527 ounce.  
 Hectogram (100 grams) equals 3.5274 ounces.  
 Kilogram (1,000 grams) equals 2.2046 pounds.  
 Myriagram (10,000 grams) equals 22.046 pounds.  
 Quintal (100,000 grams) equals 220.46 pounds.  
 Millier or tonnea—ton (1,000,000 grams) equals 2,204.6 pounds.

*Metric dry measure.*

Millimeter ( $\frac{1}{1000}$  liter) equals 0.061 cubic inch.  
 Centiliter ( $\frac{1}{100}$  liter) equals 0.6102 cubic inch.  
 Deciliter ( $\frac{1}{10}$  liter) equals 6.1022 cubic inches.  
 Liter equals 0.908 quart.  
 Decaliter (10 liters) equals 9.08 quarts.  
 Hectoliter (100 liters) equals 2.838 bushels.  
 Kiloliter (1,000 liters) equals 1.308 cubic yards.

*Metric liquid measure.*

Millimeter ( $\frac{1}{1000}$  liter) equals 0.27 fluid ounce.  
 Centiliter ( $\frac{1}{100}$  liter) equals 0.338 fluid ounce.  
 Deciliter ( $\frac{1}{10}$  liter) equals 0.845 gill.  
 Liter equals 1.0567 quarts.  
 Decaliter (10 liters) equals 2.6417 gallons.  
 Hectoliter (100 liters) equals 26.417 gallons.  
 Kiloliter (100 liters) equals 264.17 gallons.

*Metric measures of length.*

Millimeter ( $\frac{1}{1000}$  meter) equals 0.0394 inch.  
 Centimeter ( $\frac{1}{100}$  meter) equals 0.3937 inch.  
 Decimeter ( $\frac{1}{10}$  meter) equals 3.937 inches.  
 Meter equals 39.37 inches.

**Decameter** (10 meters) equals 393.7 inches.

**Hectometer** (100 meters) equals 328 feet 1 inch.

**Kilometer** (1,000 meters) equals 0.62137 mile (3,280 feet 10 inches).

**Myriameter** (10,000 meters) equals 6.2137 miles.

*Metric surface measures.*

**Centare** (1 square meter) equals 1,550 square inches.

**Are** (100 square meters) equals 119.6 square yards.

**Hectare** (10,000 square meters) equals 2.471 acres.

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# CONSULAR REPORTS.

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## MERCANTILE AGENCIES IN FOREIGN COUNTRIES.

In compliance with requests for information as to mercantile agencies in foreign countries, a circular was sent to the consular officers of the United States, under date of May 5, 1894, asking them to transmit to the Department the names of agencies in their districts similar to the agencies in the United States which give ratings of business firms.\* Following are the replies to this circular.

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### ARGENTINE REPUBLIC.

Consul Baker, Buenos Ayres: There are no mercantile agencies in the Argentine Republic, similar to such agencies in the United States, which give the ratings of commercial firms.

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### AUSTRALIA.

Consul Connolly, Auckland, New Zealand: I have the honor to submit the following names and addresses of the mercantile agencies in this colony: W. Ashton, Mercantile Chambers, Queen street, Auckland; the Auxiliary Company of New Zealand, Christchurch; R. T. Wheeler & Co., Princess

\*Information is constantly sought from the Department as to the standing of business firms in foreign countries, but the Department has declined to institute inquiries on the ground that it was not a duty which could be imposed upon consular officers. In order, however, to satisfy the numerous requests as far as practicable, the above circular was sent with the object of placing in the hands of the business community of this country the means of obtaining such information through ordinary sources. The replies of the consuls are to be taken, not as official indorsements of particular agencies, but as statements based upon the best information obtainable.

street, Christchurch; Trade Auxiliary Company, Featherstone street, Wellington. The head offices of these agencies are in the Hobb's Buildings, Christchurch.

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Consul-General Maratta, Melbourne: The only mercantile agencies in this district are the Bradstreet Mercantile Agency, 231 and 233 Flinders Lane, Melbourne, and the R. G. Dun Agency, No. 272 Little Collins street, Melbourne, both being branches of the Bradstreet and Dun agencies, of New York City, where reports are kept of every important firm trading in Australia and New Zealand.

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#### AUSTRIA-HUNGARY.

Consul Nettles, Trieste: The Credit Reform Association, of which A. Chelins is the agent, is similar to mercantile agencies in the United States, but is not as full and complete. They have on hand the rating of the larger firms of the cities; but, if the standing of the smaller dealers is required, they can give the rating only after communicating with their agent where the dealer resides.

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Vice-Consul D. B. Mason, Vienna: Until the year 1893, mercantile agencies were only allowed to give information relative to the business standing of registered firms, but owing to a legislative act in 1893, they are now permitted to give information relative to the financial standing of private parties. The following are the agencies having their head offices in Vienna: Creditschutz (Gustav Horzetsky and Gustav Funk), Maria Theresienstrasse 19, Vienna, with branch agencies at Budapest and Berlin; International Information Bureau (Benjamin Fischl), Franz Josephs Quay, Vienna, with branch offices at Prague and Brünn; Ed. Trebitsch, Schottenbastei, Vienna.

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#### BELGIUM.

Consul H. Johnson, Antwerp: In Belgium, there are no complete published credit guides, similar to those prepared in the United States, but there are a number of agencies furnishing commercial information. I am informed that the best for Belgium is Wijs Muller & Co., 63 rue des Fripiers, Brussels, a house founded in 1862. The most reliable agency of this kind in Antwerp is said to be Fl. Schuermans, 29 Ripdorf.

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Consul Roosevelt, Brussels: The mercantile agencies in Brussels are Messrs. Wijs Muller & Co. (Mutua Confidentia) No. 63 rue des Fripiers, Brussels; Association Mutuelle de Commerce et de l'Industrie, 63 rue

Montague-aux-Herbes Potageres; Agence l'Avenir Commercial Belge, 16 rue des Cendres.

I am informed that the ratings of mercantile firms in this country are not published. Information as to the commercial and financial standing of persons and firms is given only upon written application.

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#### BRAZIL.

Consul-General Townes, Rio de Janeiro: There are no mercantile agencies in Brazil similar to those in the United States.

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Consul H. C. Smith, Santos: There are no agencies in this district that give the ratings or financial standing of mercantile firms. The banks in the several cities are the only establishments that keep such records. This information would not be furnished to anyone, as they hold that to do so would be out of their line of business, if not to their prejudice. Of course, when the ratings or financial standing of any individual or mercantile firm, corporation, or even any number thereof are desired, the same could be easily furnished by any reliable person here who can afford to take the time to do it.

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#### BRITISH GUIANA.

Vice-Consul Spaight, Demerara: There are no commercial agencies in this district similar to those in the United States, which give the ratings of mercantile firms.

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#### CANADA.

Vice-Consul-General Hill, Halifax: I have the honor to state that there are no mercantile agencies here, except branches of Bradstreet's (W. H. Humphrey, superintendent, 21 George street) and Dun's (Geo. E. Faulkner, manager, 14 Prince street).

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Consul-General Anderson, Montreal: The commercial agencies of Bradstreet and Dun have branch offices here; there are no others, excepting of a purely local character.

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Consul Spence, Quebec: The names of reliable mercantile agencies in this district are: R. G. Dun & Co., Frank T. Graham, manager; Bradstreet's, represented by W. Hamilton, jr., customs broker, who reports to the Montreal office.



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**CHILE.**

Consul Dobbs, Valparaiso: There are no mercantile agencies in this consular district. Rating of merchants is to be had only through the courtesy of banks and wholesale houses.

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**CUBA.**

Consul-General R. O. Williams, Habana: There are no mercantile agencies in this consular district for the rating of business firms.

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**DENMARK.**

Consul Kirk, Copenhagen: The International Bureau, 5 Roadhusstraede, Copenhagen, is the only official mercantile agency in Denmark. This information is derived from Mr. Oscar von Beck, general agent of a New York life insurance company, a native Dane, and for many years a resident of New York city.

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**ECUADOR.**

Consul-General Dillard, Guayaquil: There are no mercantile agencies in this country, similar to those in the United States.

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**FRANCE.**

Consul Wilcy, Bordeaux: The mercantile agencies doing business in Bordeaux are: P. Birot, 42 rue de Cursol; F. Castex, 9 rue Lafayette; Co. du Progres, 92 rue Sainte-Catherine; Comptoir Commercial Financier, 33 rue Esprit des Lois; A. G. Delisle, 2 rue Condillac; E. Dufilh-Lataste, 24 rue Huguerie; T. Gentil, 10 rue Peyreblanque; P. Grenier, 63 Cours de Tourny; La Confiance Commerciale, 4 place Gabriel; L. Latapie, 30 rue Boulan; Le Médiateur du Commerce, 13 rue du Cerf-Volant; Répertoire Français, 29 rue Colmar; L. Rochoux, 8 Place Tourny; Sécurité Commerciale, 20 Cours de 14 Intendance; Société Française de Renseignements Commerciaux, 29 rue de Colmar; Vergoignan et Cie., 45 Cours de l'Intendance 45; Wijs Muller et Cie., 37, Cours de l'Intendance.

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Consul Chancellor, Havre: There are no mercantile agencies in this consular district similar to the agencies in the United States.

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Commercial Agent Griffin, Limoges: There are several commercial agencies in this consular district, but they are branches of Paris houses,

making regular reports to the principal offices. The fee paid for ratings of business firms is 2.50 francs.

Bankers do not place much reliance upon the reports given by these agencies, which are not carried on in any manner similar to the United States agencies. If a man wishes to establish his credit he goes to a bank, satisfies the bankers as to his reliability, and that becomes his reference.

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Consul Thomas, Marseilles: Upon inquiry, it is found that no agencies, similar to mercantile agencies in the United States, are in operation here. Many efforts have been made to establish institutions of like character, but they have been, without exception, unsuccessful. Business men do not like the system, and the French are skeptical of recommendations coming through any source other than their bankers. Here, at Marseilles, there are a number of institutions in existence, but they are not relied upon by the commercial public, and are not of sufficient importance to be regarded as even similar to the American institutions. The usual plan adopted by business men, when wishing facts as to the commercial standing of an individual or firm, is to address a communication to the banking house with which they conduct business, requesting such information as may be needed. It is considered by the banks a part of their duty to depositors or other parties to secure this information, and to transmit it as speedily as possible to the party making the request. This method of securing commercial knowledge is much less difficult in France than it would be in the United States, by reason of the fact that the larger banking institutions, like the Credit Lyonnais, have branches located in all the more important cities of the Republic, and on inquiry made at Marseilles, for instance, as to the rating of a firm in another locality, information is secured through the branch house of the bank at or near that place.

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Consul Savage, Nantes: Mercantile agencies are unknown in Brittany, although Dun & Co., have established one on the American plan at Paris. In this consular district, whenever a merchant desires to know the financial standing of a firm, he sends the name of said firm to his banker with a request to report thereon. The banks keep themselves very well posted as to commercial ratings, and immediately forward a detailed reply to the depositor who requests the information, but the reply is invariably stamped "without guaranty," in order that they may not be held legally responsible. This system seems to work to the entire satisfaction of the commercial community here.

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Consul-General Morss, Paris: In reply to Department circular, I transmit the following names of mercantile agencies in Paris which give the ratings of business firms, viz, L'Union Commerciale, No. 104 rue de Richelieu;

La Sureté du Commerce, No. 3 rue d'Uzes; Wijs Muller et Cie., No. 4 Place des Victoires; Union Nationale du Commerce-et de l'Industrie, No. 10 rue de Lancry; Alliance des Chambres Syndicales, No. 10 rue de Lancry; Bradstreet's (Mr. Charles Kléc, director), No. 20 Boulevard Montmartre; Dun & Co. (New York), No. 5 rue Chancat. In this connection I beg to state that the branches of United States agencies here are for the purpose of giving commercial ratings of English and American firms to French houses. They do not give ratings of French houses.

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Consul C. P. Williams, Rouen: I can not ascertain that any reliable mercantile agencies exist in this consular district. The ratings of mercantile firms are procured by residents from bankers, *huissiers* (a class of men who collect debts and hold semiofficial positions), or private sources. The French firms, as well as Bradstreet and Dun, procure this information from their correspondents located here and elsewhere, but not named to the public.

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#### GERMANY.

Vice-Consul-General Abbot, Berlin: Relative to mercantile agencies in this city, I beg to report as follows: Auskunftsbureau für Handel und Industrie, Brückenstrasse 66.; W. Bautze, Gneisenaustasse 100; Bradstreet's, Charlottenstrasse 23; Creditreform Verein, Klosterstrasse 79; Creditschutz, Koehstrasse 27; Dun & Co., Unter den Linden 50; Oswald Knisse, Dresdnerstrasse 36; Lesser & Liman, Leipzigerstrasse 96; Reuter's Telegram Company (limited), Puttkamerstrasse 14; W. Schimmelpfeng, Charlottenstrasse 23; Salamansky & Co., Taulenstrasse 35.

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Consul Starkloff, Bremen: In answer to the Mercantile-Agency Circular, I beg to give the names of the following firms: Nicolaus Mann & Co., and Rudolf Mosse, both of Bremen.

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Consul-General Carroll, Dresden: W. Schimmelpfeng, Dresden, is considered to be a reliable commercial agent in this city. There is a branch agency of Bradstreet's in Dresden.

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Consul-General F. H. Mason, Frankfort: There is not in this district, nor elsewhere in Germany, any commercial agency having the scope and authority of agencies in the United States, nor is there published any general register giving the ratings of mercantile firms throughout Germany. The business of furnishing special reports on the financial standing of commercial firms is still in the hands of private agencies, which are operated by

more or less confidential methods. There are several of these agencies, but the two principal ones for this section of Germany are W. Schimmelpfeng & Co., whose central office is at Berlin, with branches at several principal cities, and Messrs. Lesser & Liman, whose head office is at No. 13 Grosse Gallusstrasse, Frankfort, with branch agencies as follows: Berlin, No. 96 Leipzigerstrasse; Hamburg, Rödingsmarkt 13; and Vienna, Franz Josephs Quai 51. This latter is in all respects the leading commercial agency for the city and district of Frankfort, and it is freely used by most of the leading banks and commercial firms of this city.

Its method of operation will be explained by the prospectus, and the blank form of inquiry (*Auskunfts Zettel*), which are transmitted in duplicate as inclosures with this report.\* The inquiry blanks are bound in the form of an ordinary check book, each book containing from 10 to 500 blanks, to suit the varying needs of subscribers. A book with 10 blanks costs \$2.38; 100 blanks, \$23.80; 300 blanks, \$66.64; and 500 blanks, \$119. The purchase of such a book of blanks, and the registration of the purchaser in the books of the central or one of the branch offices constitutes a subscription, and entitles the subscriber to all the services of the agency, subject to the conditions described in the prospectus. The prices above given are final for blanks used for inquiries made in Germany. When the blank is used to inquire for the rating of a firm in a foreign country, a supplementary charge is made, in accordance with the schedule given in the prospectus. Thus, if a subscriber to the agency resident in Germany wishes to learn the rating of a firm in the United States, he pays for the inquiry 5 marks (\$1.19) in addition to the original subscription price of the blank itself. For Russia, this supplementary fee is 60 cents, and for England, Belgium, Holland, France, and Switzerland, about 60 cents.

If inquiry is made by telegraph, the subscriber pays, besides the actual cost of transmission, 25 cents when the inquiry is made in Germany, and 50 cents when it is made in a foreign country. Telegraphic demands for information coming from nonsubscribers are not entertained. Nominally, inquiries are made only for subscribers, but the rule is somewhat flexible, and exceptions are made in favor of nonsubscribers when the circumstances seem to justify such departure, but in such cases the charge for service is correspondingly advanced.

One feature of this system, which may probably have a certain practical interest in the United States, is described under the heading "*Nachweis von Agenten und Firmen*," and relates to the finding and employment, upon application from foreign countries, of agents and commission merchants to transact any kind of business that may be desired. Selections are in this manner made with great care and are generally satisfactory, as the agency has the fullest means of knowing not only the financial responsibility, but the general business standing and ability of any agent or firm that it recommends. It also makes the necessary contracts and brings the con-

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\* Prospectus and forms filed in Bureau of Statistics, Department of State.

tracting parties into business relations, for what will probably seem in the United States a very moderate charge.

The method followed in making inquiries of any specified firm in Germany or a foreign country is for the subscriber to fill out one of the blank forms and submit it personally or by mail to the central office in Frankfort or one of its branches. The inquiry is made and the reply returned to the subscriber, and, although the agency assumes no strictly legal responsibility for the accuracy of its reports, they are said by bankers and commercial firms of large experience to be uniformly correct and trustworthy.

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Consul Robertson, Hamburg: The leading mercantile agencies in Hamburg are: W. Schimmelpfeng & Co., who are also the general agents for Europe of Bradstreet's; Eduard Blum; and Lesser & Liman.

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Consul Crane, Hanover: Within this consular district, there are no independent mercantile agencies that can be compared with those in the United States. The two Berlin bureaus of W. Schimmelpfeng and Lesser & Liman are represented here, respectively, by Herr Schapira, No. 11 Bahnhofstrasse, and S. S. Cohen, Grubenstrasse, 12. The Reichsbank, centering in Berlin, gives confidential information to bankers and private parties in correspondence with it.

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Consul Muth, Magdeburg: The only reliable institutions of this kind in Germany are W. Schimmelpfeng and Lesser & Liman, both of Berlin. The former has branches at Breslau, Dresden, Frankfort, Hamburg, Hanover, Cologne, Königsberg, Leipsic, Munich, and Stuttgart, which furnish the information for their respective districts. The Magdeburg representative of W. Schimmelpfeng is not allowed to furnish information direct, but will do so through the Berlin office. Bradstreet's are the correspondents of W. Schimmelpfeng for the United States and Canada.

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Consul Steiner, Munich: The following is a list of reliable mercantile agencies which give ratings in Munich: Auskunft, W. Schimmelpfeng; (Bradstreet's), Marienplatz 3; Debit and Credit, Kaufingerstrasse 16; Soll & Haben, Kaufingerstrasse 36; and Günther, Hermann & Co., Neuhauserstrasse 3.

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Consul A. C. Johnson, Stuttgart: There are no books of mercantile ratings published in this consular district answering to similar publications in

the United States. There are, however, mercantile agencies in Stuttgart, where one may inquire both as to the character and financial standing of persons. Such agencies are Gentner & Co., Königstrasse 23, and W. Schimmelpfeng, Sophienstrasse 37. To use these agencies, one may subscribe by the year, with the right to ask for information at any time, or by paying a small fee (about 50 cents), may get information in any single case.

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#### HONGKONG.

Consul Hunt, Hongkong: There are no mercantile agencies in Hong-kong which give the ratings of business firms.

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#### ITALY.

Consul Davis, Florence: There are no mercantile agencies in this district, but the financial condition of any business firm may be obtained from the provincial chambers of commerce.

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Consul Fletcher, Genoa: I can not learn that there is more than one reliable mercantile agency in this consular district, viz, the Mercurio-Italiano, Vico San Pancrazio, No. 2, Interior 2, Genoa.

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Consul Hazeltine, Milan: There are no mercantile agencies similar to those in the United States in Milan.

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Consul Dean, Naples: There are no reliable commercial agencies similar to those in the United States in this consular district. Several fruitless attempts have been made within the past few years to establish them in Naples.

The most trustworthy information relative to the financial status of parties will be derived through the following banks of Naples: Holme & Co., Muericoffre & Co., and Gugliemo, Mendia & Co.

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Consul-General Jones, Rome: There are no reliable mercantile agencies in Italy, similar to agencies of the kind in the United States.

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Commercial Agent Mantius, Turin: Under the act of May 20, 1876, the Italian Minister of Agriculture, Industry, and Commerce recommended in

a circular to the chambers of commerce of the cities of the Kingdom the establishment of private institutions organized on the principle of the Guardian Society, of London, for the purpose of giving reliable information about the commercial standing of the business firms throughout the country. Shortly before that, a corporation called *La Confidenza Internationale* had been organized at Milan and had commenced business. In the summer of 1884, at the time of the exposition at Turin, the corporation was awarded a silver medal, but whether for its success in business or for its really very artistic exhibit in bronze (which attracted general attention as the prettiest piece of advertising ever seen in Italy), I am unable to find out. Anyhow the *Confidenza Internationale* lived—was several times sued for giving incorrect information—and still exists at the present moment.

Its methods were antiquated from the beginning, the same system introduced in 1823 in England having been adopted with very few modifications. The business houses did not receive specific ratings by this commercial agency, nor were the subscribers regularly supplied with information as to changes. Each subscriber was furnished a sort of check book. If he wanted to know about the financial standing of another firm, he tore off the check, wrote his name, branch, and place of business, etc., also the name and place of the house he desired to be informed about on one side, leaving the agency to fill out, with its answer, the other side.

The charge for such service is moderate, ranging about 33 lire (about \$6.37) per book containing twenty-five pages for as many queries.

The lack of an efficient financial agency is keenly felt by the conservative and substantial element in the business world of this country, especially of Turin, Genoa, and Milan, where all the large industrial establishments are located.

Not only at home but abroad, are the business men of Italy placed at a disadvantage for want of a properly conducted mercantile agency.

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Vice-Consul Rechsteiner, Venice: I give herewith the names of mercantile agencies in this district, who can give the ratings of mercantile firms, but who do not issue such publications as those of similar agencies in the United States: Fischer & Rechsteiner, Venice; *Bilancia Commerciale Veneta*, Verona.

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#### JAMAICA.

Consul Eckford, Jamaica: There are no mercantile agencies in this island, similar to those in the United States, which give the ratings of mercantile firms. Information of this nature is generally obtained through the legal profession.

## NETHERLANDS.

Consul Downes, Amsterdam: The mercantile agencies in Amsterdam are: Branch office of W. Schimmelpfeng, of Berlin, Kloveniersburgwal 51; Vereniging Credietreform, Singel 402; Mutna Confidentia, Wijs Muller & Co., Singel 299; and Van der Graaf & Co., Singel 514.

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Consul Reque, Rotterdam: The leading mercantile agency in Holland is the Handels-Informatie-Bureau, Van der Graaf & Co., Rotterdam and Amsterdam. The telegraphic address at Rotterdam is "Informatie;" at Amsterdam, "Vandergraaf Comp."

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## PORTUGAL.

Vice-Consul Wilbor, Lisbon: There are no mercantile agencies in Portugal which give the ratings of mercantile firms.

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## RUSSIA.

Acting Consul Billhardt, Moscow: A mercantile inquiry office at this place is conducted by John Richard Altman, who, in his prospectus, offers to give prompt and detailed information relative to the commercial standing of firms throughout the Russian Empire and its colonies, and make collections, etc. His general address is John R. Altman, Moscow, and his telegraphic address "Altman, Moscow." In his prospectus, he refers to the Moscow Discount Bank, the Moscow Commercial International Bank for Foreign Trade, the Moscow Credit Lyonnais, etc.

Foreign merchants apply frequently to mercantile agencies in Berlin for information as to the standing of firms in Moscow.

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Consul Rawicz, Warsaw: The only mercantile agency in Warsaw is conducted by Bernard Berson, Chlodna street, 22. It is customary in this country to be supplied with the ratings of mercantile firms through first-class banks.

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## SPAIN.

Vice-Consul Hernandez, Madrid: I am informed that the principal mercantile agency in this consular district is that of Enrique y Jose Ma. Palacios, whose address is Calle de Fuencarral, Madrid.



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SWEDEN.

Consul O'Neil, Stockholm: I transmit, herewith, the names of two respectable parties in Stockholm who give the ratings of mercantile firms: Jönköpings Juridiska Byrå, and Svenska Köpmansbyrå.

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## SWITZERLAND.

Vice-Consul Hinnen, Berne: In this consular district no mercantile agencies exist which give the ratings of commercial firms.

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Consul Germain, Zurich: I give herewith a list of mercantile agencies doing business in Zurich: I. G. Arnold, Bahnhofstrasse 49; Jacq. Hess, Grossmuensterplatz 8; J. Langmeier, Gessnerallee 48; Schweiz Informations-Bureau, Boersenstrasse 16; Simmler & Vollenweider, St. Peterstrasse 10.

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## UNITED KINGDOM.

Consul Taney, Belfast: The only mercantile agency in the United Kingdom which records or publishes ratings of firms is that of Messrs. Seyd, in London, but there are two other agencies in London which have subagents in this city, as well as in all the principal cities in Great Britain and Ireland. These are Stubbs' and Kemp's. Each of these publish a weekly gazette giving a list of judgments, bills of sale, bankruptcies, appointment of assignees, dividends on bankrupt estates, distribution of assets, registered deeds, assignments, dissolutions of partnership, notice to creditors, etc. They keep no record of the financial standing of individuals, firms, or corporations.

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Consul Meeker, Bradford: There are no mercantile agencies in this district similar to those in the United States. The mercantile community rely upon several institutions of a like character which operate from London. They are: Seyd & Co., 38 Lombard street; W. Schimmelpfeng, 137 Cheapside, and Stubbs' Mercantile Offices, 42 Gresham street, E. C.

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Consul Walker, Cork: In Ireland, the banks do much of such work as in the United States is performed by mercantile agencies, though there are some excellent mercantile agencies in this city. Among these are Kemp's Mercantile Offices, 11 Marlborough street, and Stubbs' Mercantile Offices, 53 South Mall. These offices have agencies, I believe, in all the principal towns.

The methods of obtaining and imparting confidential information seem to be similar to the methods employed by the American agencies.

As regards the banks, they make inquiries for their customers without charge. For example, take the Bank of Ireland, the most powerful corporation in this country, which has branches in all towns of consequence. If a merchant in Queenstown desires to know something of the financial standing and resources of a firm or an individual in Fermoy, he applies to the Queenstown branch of the Bank of Ireland. The manager of this branch applies to the manager of the Fermoy branch, and within an hour, if need be, the Queenstown merchant is in possession of absolutely reliable information.

I am informed that the different arrangements referred to leave nothing to be desired.

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Consul Ashby, Dublin : There are two mercantile agencies located in Dublin. Probably the most satisfactory, in reference to Irish business, is the Dublin Mercantile Association (limited), established in 1882, and having its head office at 27 Dame street, and suboffices at 16 Marlborough street, Cork, and in Colbeck street, Waterford. This company does a general mercantile collecting business in Ireland, and has an agent in every town of any importance, as well as a reliable solicitor in each county. The company is not organized for profit, and is, I understand, confined to strictly mercantile business. The membership fee is one guinea per annum, and the members receive the official publication, which contains a list of the bankruptcies, court judgments, and, in fact, an abstract of all matters of interest to debtors and creditors. The least charge made for collections is 1 shilling (24 cents), the highest, 10 shillings (\$2.43).

The other agency here is the Stubbs' Mercantile Offices, established in 1836, with head office at 42 Gresham street, London, E. C. Its chief offices for Ireland are at 1 College street, Dublin, and 48 Royal avenue, Belfast, with suboffices at Cork, Limerick, Waterford, and Londonderry. The object of this association is the protection of bankers, merchants, manufacturers, and traders in commercial transactions. This agency issues a weekly gazette for Ireland, containing the following information: Lists of judgments, bonds, bills of sale, bankruptcies, etc., of interest to debtors and creditors. The annual subscription is 18s. (\$4.38). The charge for collection to subscribers is 5 per cent on amounts under £5 (\$24.33), one shilling being the minimum charge; on debts of more than £5, 5 per cent is charged on the first £5 and 2½ per cent on the balance. Upon debts paid by installment, 5 per cent is charged. If the debts are collected through a solicitor, the company then charges 5 per cent on the first £50 (\$243.30) and 2½ per cent on the balance.

Both of these companies, I understand, furnish private information to their subscribers regarding the financial standing of individuals or firms seek-

ing credit, when specific application is made to them. Both agencies are regarded as reliable.

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Consul Savage, Dundee: There are five principal mercantile agencies doing business in Dundee, viz, Stubbs' Mercantile Offices, Kemp's Mercantile Offices, Scottish Trade Protection Society, the Glasgow Guardian Society, and the East of Scotland Traders' Mutual Protection Society.

Although the object of these agencies is the same as that of similar organizations in the United States, their method of doing business differs considerably, in that they do not furnish customers with books containing the ratings of business people, but supply information in regard to any particular person or firm on request. They also supply their customers with printed weekly reports, giving information in regard to failures, bills of sale, judgments, etc. Another feature of their business is the collection of debts through their agents.

I inclose various printed papers\* giving particulars in regard to the agencies mentioned.

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Consul Morse, Glasgow: There are two reliable mercantile agencies within this consular district, viz, Stubbs' Mercantile Offices, 116 St. Vincent street, Glasgow (head offices at 42 Gresham street, London, E. C.), and Kemp's Mercantile Offices, 22 Redfield street, Glasgow (46 Cannon street, London, E. C.). These agents differ from those in the United States, in that they do not publish ratings of business houses. They publish weekly gazettes, and have inquiry and debt collection departments.

Subscription rates are reasonable, and subscribers are enabled to secure information regarding the business status of any house in Great Britain.

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Consul Harris, Leeds: I beg to submit the following names and addresses of the mercantile agencies in Leeds: Clough, Ford & Co., Prudential Buildings; John Kemp & Co., 28 East Parade; Stubbs & Co., 6 South Parade.

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Consul Neal, Liverpool: The following mercantile agencies in Liverpool give the ratings of commercial firms: The Incorporated Protection Society of Liverpool, 11 Lord street; the Guardian Society, Victoria street; Stubbs & Co. (limited), Lord street; and Kemp & Co., Victoria street.

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Consul Grinnell, Manchester: I transmit herewith the names of the principal mercantile agencies in Manchester: Guardian Society for the protection of Trade, 79 Mosley street; Stubbs' Mercantile Offices, 14 Brown

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\*Filed in Bureau of Statistics, Department of State.

street; Kemp's Mercantile Offices, 31 Market street; Textile Trades' Association, 14 Brown street; and the agency of R. G. Dunn & Co., 4 Albert square.

### URUGUAY.

Consul Schramm, Montevideo: There are no mercantile agencies in Uruguay which give the ratings of commercial firms and individuals, after the manner of those in the United States.

## COMMERCE AND INDUSTRIES OF JAPAN.

The Swiss vice-consul at Yokohama, Dr. Paul Ritter, has recently sent an elaborate report on the commerce and industries of Japan to his Government. The following extracts may prove of interest to American readers:

The total imports of Japan for 1893 amounted to 88,257,171 yen,\* being 17,000,000 yen in excess of 1892. Switzerland participates in this amount with 669,301 yen, according to the Japanese statistics, which, however, are not very reliable.

*Watches.*—There has been great excitement among importers and exporters, owing to the projected establishment of a great American watch factory at Yokohama. After several vain efforts made by American speculators to sell the old machines brought over from the United States to Japan by a stock company, for which they had asked 1,000,000 yen, they lately succeeded in selling them to a Japanese stock company, together with a considerable number of unfinished watches. The capital stock of the company is stated to be 300,000 silver yen, of which 150,000 yen have been subscribed by the originators themselves. The factory will be established at Osaka, and I will be able next year to report on its results.

The Swiss watch industry will not be encroached upon to any extent by this undertaking. As to clocks, hardly any of them have heretofore been imported from Switzerland, and, as to watches, the Japanese do not like factory-made works. If the Japanese people had been willing to buy such, they could long ago have bought the cheap American factory watches instead of the expensive Swiss, and the following figures will show how little chance the former have to increase their sales in Japan.

The total imports for 1892 and 1893 were 89,318 watches, worth 431,918 yen, and 103,747 watches, worth 523,126 yen, respectively. The increase in number was 14,429, or about 16 per cent, and the increase in value, 91,208 yen, or about 21 per cent.

The countries named below participated in these figures as follows:

Countries.	1892.	1893.
	<i>Number.</i>	<i>Number.</i>
Switzerland.....	80,447	86,713
France.....	5,751	10,243
United States.....	2,816	2,406
Germany.....	287	3,694
Great Britain.....	9	631
Other countries.....	8	.....
Total.....	89,318	103,747

\* The silver yen was valued at 55.6 cents by the United States Treasury on January 1, 1894.

From the United States, there were further imported 333 plated or rolled watch cases and 106 gold cases, and from Switzerland parts of watches worth 9,077 yen, which items were probably required for watches finished in Japan.

The imports of watches to Japan increased in 1893, as against 1892, by about 16 per cent in number, and about 21 per cent in value. The increase in value is not due to the importation of higher-priced watches, but to the advanced rate of exchange in the second half of 1893.

*Machinery.*—Several Swiss machine shops are exporting machinery to Japan, especially such as is needed for railroad building, electrical works, and mills.

*Half-silk satins.*—There were imported from Switzerland in 1893, 44,463 yards, worth 29,631 yen; in 1892, 153,637 yards, worth 93,717 yen; and in 1891, 83,817 yards, worth 49,526 yen. The Japanese industry is making rapid progress in this line, both in house-made goods and satins manufactured on power looms.

*Imports and exports.*—The total Japanese exports for 1893 amounted to 89,712,864 yen, as against 91,102,754 yen in 1892. The exports exceeded the imports by 1,455,692 yen. The principle articles of export are rice and tea, outside of silk exports, which I will mention later. There was a decrease in the exports of tea as compared with 1892, the United States being the principal, not to say the only, buyer of Japan tea, and the crisis in the United States reduced consumption. Prices of Japan tea fell to a low point, and a number of farmers stopped planting tea, replacing it with barley and other cereals.

The production of rice represents half of the total agricultural production of Japan. The quality is very good and the grains well filled. The exports of this article amounted to 5,001,156 yen in 1893, as against 4,162,451 yen in 1892.

*Cotton industry.*—This industry is making rapid progress in Japan. In 1887, there were in operation 24 mills, with 130,000 spindles; in 1891, 33 mills, with 270,000 spindles; and in 1893, 43 mills, with 385,265 spindles.

Manual labor being very cheap in Japan, cotton-spinners can meet all outside competition, even that of India, and the following figures will show how speedily the inland production has replaced the foreign products:

Year.	Japanese production.	Foreign imports.
	<i>Pounds.</i>	<i>Pounds.</i>
1888.....	956,804	47,439,639
1889.....	20,952,456	42,810,912
1890.....	32,217,687	31,908,302
1891.....	45,306,444	17,336,600
1892.....	64,046,925	24,308,491

The Japanese production of cotton goods is not only supplanting the Indian and English imports, but Japan is exporting with growing success, especially to China. The following are the values of exported cotton goods:

Description.	1892.	1893.
	<i>Yen.</i>	<i>Yen.</i>
Raw.....	52,512	75,613
Yarns.....	7,719	59,175
Cloth.....	177,445	391,989
Flannel.....	106,100	281,151
Piece goods.....	437,922	828,391
Underwear.....	54,009	132,270

*Cheese.*—In this product, Switzerland and the United States are competitors. It is true that the imports of this article are rather small, the Japanese not being a cheese-eating nation, and the product is only imported for the demand of foreigners. Switzerland shipped 775 yen worth of cheese against 869 yen in 1892.

*Umbrellas.*—The exports of European umbrellas manufactured in Japan have increased as follows: For 1885, 1,767 yen; 1892, 364,308 yen; 1893, 589,272 yen.

*Straw mats.*—The manufacture of straw mats can hardly meet the increasing demand from the United States. Straw is generally more extensively used for manufactures in Japan than in Europe. All sugar bags, grain bags, salt bags, etc., are made of straw.

*Cigarettes.*—Cigarettes valued at 29,835 yen were exported in 1893, as against 17,249 yen in 1892. These cigarettes, made of Japan tobacco, are like the American in form, mode of packing, etc.

*Silk crop.*—As has been the case these last few years, so the spring reports of 1893 announced a prospective increase of the silk production over the entire country, and the quantity of silk to be exported was estimated to be, at the least, 55,000 bales.

Prospects were good in all districts until, at the beginning of May, severe frosts were reported from Djoshui, and Bushui, and the losses in some districts were very great, as a quantity of silkworms had to be thrown out, for want of food. These losses were made good, to a certain extent, by subsequent better weather, and the consequent recovery of the mulberry trees allowed silk growers to again resume production. The extended railway facilities, enabling growers to ship mulberry leaves to distant points helped, to a great extent, to recoup losses in damaged districts by the shipment of mulberry leaves from other parts of the country.

In addition to damages by frost, above mentioned, other drawbacks appeared, which prevented exports from reaching the predicted estimates for the season of 1893-'94, which, in all probability, will not even reach the export figures of the season of 1892-'93.

As regards quality, it was superior to that of the previous year, but great mistakes were made by spinners in the classification of silks, not knowing if their product would find buyers in the United States or in Europe. In consequence of the crisis in the United States, which had also a great influence on the silk industry of that country, American buyers were compelled to withdraw entirely from the Japanese markets, and consequently, a number of spinners in the districts of Siushui and Koshui made fine numbers, while generally, they had been manufacturing only coarse numbers for the American market. The first result of this was a mixture which was fit for neither market. After awhile, however, spinners found an opening, and large quantities of fine silks were exported to Europe. When the United States began to purchase again a new change had to be made, and this uncertainty was of great disadvantage to the silk product. The financial result can not be called a favorable one for Japanese silk spinners, although the drop in exchanges did favor them considerably. When the new cocoon crop first appeared, silk prices were still very high, good prices being realized for cocoons in the early-producing districts such as Kansai, but in the late-producing districts prices were much lower on account of the sharp and heavy decrease in the price of raw silk which followed.

The total supplies of the season of 1892-'93 amounted to 51,700 piculs (6,891,610 pounds), which, together with the stock on hand June 30, 1892, *i. e.*, 1,600 piculs, made a total stock of 53,300 piculs (7,104,890 pounds). This quantity was disposed of as follows: Total exports, 46,815 bales, or 47,600 piculs (6,345,080 pounds); home consumption, 5,200 piculs (693,160 pounds); stock on June 30, 1893, 500 piculs (66,650 pounds); total 53,300 piculs (7,104,890 pounds).

The silk production in the Kansai provinces is making surprising progress, and is already in the second rank (*zaguri* are not manufactured to any extent), and this increase seems not as yet to have reached its highest point. The good demand for filatures and their comparatively high prices are the cause of silk-spinning mills on the European system being continually on the increase, while other qualities are decreasing, as, for instance, grappes (formerly

the principal article), the supplies of which now are only 1,900 piculs. Thus the improvement in the production of raw silk in Japan is steadily going on.

*Supplies for the seasons 1888-'89 to 1893-'94.*

Description.	1888-'89.	1889-'90.	1890-'91.	1891-'92.	1892-'93.	1893-'94.*
	<i>Piculs.†</i>	<i>Piculs.†</i>	<i>Piculs.†</i>	<i>Piculs.†</i>	<i>Piculs.†</i>	<i>Piculs.†</i>
Filatures.....	10,600	18,550	19,700	27,400	29,300	27,000
Zaguri.....	10,700	17,600	10,300	16,400	14,700	11,900
Crappes.....	5,800	3,500	1,600	3,700	1,900	550
Kakeda.....	4,000	3,800	4,100	5,000	4,800	4,000
Sendai.....	550	450	200	300	200	100
Hamatsky.....	1,800	1,400	700	1,200	800	350
Other classes.....	150	100				
Total.....	39,600	40,400	36,600	54,000	51,700	43,900

\* July 1 to December 1, 1893—that is, half the season.

† Picul = 133½ pounds.

*Exports for the seasons 1888-'89 to 1892-'93.*

Countries.	1888-'89.	1889-'90.	1890-'91.	1891-'92.	1892-'93.
	<i>Bales.*</i>	<i>Bales.*</i>	<i>Bales.*</i>	<i>Bales.*</i>	<i>Bales.*</i>
Europe, continent.....	17,981	14,832	14,672	18,691	19,120
England.....	2,779	204	618	308	254
United States.....	19,916	20,370	18,340	30,069	27,441
Total.....	40,676	35,406	33,630	49,068	46,815

\* Bales of 133½ pounds.

*Silk prices.*—Regarding silk prices, the fluctuations of 1893 were still greater than in 1892. Prices advanced until spring, reaching their highest point in April and May; then things changed considerably, owing to several causes, and at the end of the year prices were as bad as they were promising at the beginning of the season, showing a decrease from the highest to the lowest point of 40 per cent.

Silk wastes have suffered as much as raw silk, and the fluctuations in this article are as great as for silk proper.

EUGENE GERMAIN,

ZURICH, October 6, 1894.

Consul.

## UNITED STATES TRADE WITH ITALY.

While in 1892, the exports from Italy to the United States amounted to more than \$19,000,000 in value, exceeding the imports by \$4,000,000, the imports from the United States in 1893 exceeded the exports by \$3,000,000.

The following table shows Italy's imports from and exports to the United States for the past five years:

Year.	Imports.	Exports.
1889.....	\$14,542,936	\$14,588,098
1890.....	15,762,110	14,873,002
1891.....	14,193,606	14,206,151
1892.....	15,206,663	19,328,171
1893.....	18,457,362	15,754,397

The increase in Italian imports in 1893 is due to the increased importation of American cotton. Italy has been taking less and less Indian cotton for the last few years. The low price of cotton and the superiority of the American product have brought this about.

The following table shows the imports of cotton from the United States during the last five years :

Year.	Quantity.	Value.
	<i>Pounds.</i>	
1889.....	42,801,000	\$4,693,567
1890.....	46,190,540	5,065,285
1891.....	57,674,100	5,312,518
1892.....	57,843,940	4,820,754
1893.....	84,515,740	8,157,724

Leaf tobacco is another American product, the importation of which is on the increase. In 1892, Italy paid \$2,509,000 for American tobacco and \$2,798,500 in 1893, this difference being due to fluctuation in prices, the quantity of tobacco imported remaining about the same, *i. e.*, 27,500,000 pounds.

The value of other leading American products imported into Italy in 1893 were: Resin, \$2,260,416; petroleum, \$1,802,234; lard, \$734,751.

The importation of wheat fell from 19,938 tons, worth \$808,091, in 1892, to 5,337 tons, worth \$176,402.

#### EXPORTS TO THE UNITED STATES.

Raw silk is the most important Italian product exported to the United States. The short silk crop of 1892 explains the falling off in the exportation of raw silk in 1893, as will be seen from the following table, which includes the exports for the last five years :

Year.	Quantity.	Value.
	<i>Pounds.</i>	
1889.....	194,260	\$954,385
1890.....	205,480	962,298
1891.....	478,060	1,887,347
1892.....	1,303,500	6,033,952
1893.....	576,620	2,630,397

The exportation of green fruit (oranges and lemons), has not varied much from year to year, as the following table will show :

Year.	Quantity.	Value.
	<i>Pounds.</i>	
1889.....	242,931,920	\$3,836,068
1890.....	256,255,560	4,046,438
1891.....	166,035,100	2,521,712
1892.....	200,093,740	3,159,603
1893.....	247,030,900	3,257,454



Brimstone shows a decreased exportation in 1893, owing to the fall in prices. The quantity exported, however, remained about the same—195,896,800 pounds, valued at \$1,374,932.

The exportation of argols (tartar) also shows a decrease. The quantity exported was 15,167,680 pounds, valued at \$1,061,500.

The exportation of olive oil fell off, owing to a short crop in 1892, from 9,577,040 pounds, worth \$882,203, to 5,427,840 pounds, worth \$523,802.

Italian wines are making no headway in the United States, and are not likely to do so until a more scientific method of fermentation shall have become the rule in this country.

The wine exports to the United States during the last five years were as follows:

Year.	Wine in bottles.		Wine in casks.	
	Quantity	Value.	Quantity.	Value.
	<i>Number.</i>		<i>Hectoliters.</i>	
1889.....	215,000	\$62,954	120,388	\$789,959
1890.....	629,800	212,686	51,639	378,666
1891.....	263,200	85,499	60,184	371,718
1892.....	556,300	155,751	51,711	229,477
1893.....	884,400	273,095	74,738	332,767

NOTE.—One hectoliter equals 26.417 gallons.

WALLACE S. JONES,  
*Consul-General.*

ROME, *September 25, 1894.*

## RECENT COMMERCE OF FRANCE.

A leading article in one of the prominent reviews says: "The commercial situation is grave, or it appears to be, which is the same thing for the general public." The explanation offered for this state of affairs in France depends generally upon the political bias of the interpreter. There are protectionists and free traders, both of whom seek the solution according to their respective views of the fiscal policy now in force, which is decidedly a protectionist one. The financial crisis is contemporary with the inauguration of the new tariff, and the supporters of this tariff are called upon to explain the fact that from the commencement of the year 1892, which was the date of the enactment of the new tariff, until the 30th of September, 1894, there was a falling off in exports of more than 699,000,000 francs (\$134,907,000), taking the year 1891 for comparison. "Bad times exist; they commenced with the new tariff; therefore, the tariff is the cause." Such is the reasoning which the free traders put forward, but the protection-

ists point to the fact that France does not suffer alone from a diminution of exports—that England, a country with a free-trade policy has suffered as well, and that the depression which exists in France is experienced everywhere.

It is generally admitted, nevertheless, that the tariff is responsible for the falling off of 128,000,000 francs (\$24,704,000) in exportations to Spain, and 80,000,000 (\$15,440,000) to Switzerland during these thirty-three months. The result is that the free traders and sufferers from the depression in general are loudly demanding a change in the existing laws.

The Chamber of Commerce of Rheims, which has constituted itself the champion of the champagne district, has sent delegates to the Ministers of Commerce and Foreign Affairs in order to devise means to ameliorate the situation in that department, which suffers from a diminution in the demand for its champagnes, while its wool industries, which are very important, are undergoing an actual crisis. It is reported that several failures of woollen mills have occurred at Rheims, and in one case, 300 weavers have been thrown out of work, while the total proportion of idle employees in the woollen industries of the city is 30 per cent.

In the department of the North, a center also for woollen industries, the situation is not much better. One does not hear a single encouraging report. Some failures have occurred in the spinning industries. The Central Bureau of Labor reports the situation of the weavers worse than ever. At Dunkirk, nine establishments employing 2,000 hands, are running on reduced time.

In fact, the wool situation, or crisis, as it is called, has a prominent place in the general discussion of the commercial situation, and there can be no doubt that it is bad enough. Much was hoped from the changes in the United States tariff, but up to the present time, these hopes have not been realized, and the commercial travelers who have returned from the United States bring only discouraging reports. To add to the chagrin of the Roubaix manufacturers, the reports received from Bradford, their old-time rival, are to the effect that business with the United States is most encouraging. It is reported that orders for 300,000 pieces of woollen goods were placed in that market last week from the United States. The *Revue du Commerce Extérieur* attempts to explain the situation in the woollen trade by suggesting that the French fabrics are not *a la mode* at the present time—an explanation which is not very consoling for those interested. A more reasonable explanation might be sought, I think, in the competition of Germany, whose woollen industries seem to have increased at the expense of those of France. France exported in 1890, 361,000,000 francs (\$69,673,000) of woollens; 327,000,000 francs (\$63,111,000) in 1891; about the same amount in 1892, and only 278,000,000 francs (\$53,654,000) in 1893, while the exportations for 1894 show evidence of falling much below the latter figure.

The Revue du Commerce Extérieur publishes the following figures of the exports of woollen goods, which are interesting in this connection :

Description.	1891.		1892.		1893.	
	<i>Franks.</i>		<i>Franks.</i>		<i>Franks.</i>	
Cloths, cashmeres, and twilled goods.....	134,200,000	\$25,900,600	154,500,000	\$29,818,500	121,400,000	\$23,430,200
Upholstery goods (pure wool)	1,300,000	250,900	2,400,000	463,200	4,500,000	868,500
Tissues for clothing.....	97,500,000	18,817,500	78,200,000	15,092,600	82,500,000	15,922,500
Carpets.....	3,200,000	617,600	2,500,000	482,500	2,500,000	482,500
Knitted goods.....	16,800,000	3,242,400	13,600,000	2,624,800	9,100,000	1,756,300
Woolen trimmings and laces :						
Pure wool.....	8,800,000	1,698,400	7,900,000	1,524,700	7,100,000	1,376,300
Mixed.....	3,700,000	714,100	3,500,000	675,500	3,900,000	752,700
Garments.....	8,800,000	1,638,400	7,700,000	1,486,100	4,500,000	868,500
Mixed stuffs.....	51,700,000	9,978,100	58,100,000	11,213,300	43,400,000	8,376,200
Velvets.....	1,000,000	193,000				
Total.....	327,000,000	63,111,000	328,400,000	63,381,200	278,900,000	53,827,700

The general situation in regard to exports has grown worse since the end of the first half of the current year, as the following table of exports for the nine months ending September 30, 1893 and 1894, shows :

Countries.	1893.		1894.	
	<i>Franks.</i>		<i>Franks.</i>	
England.....	728,034,000	\$140,510,562	667,665,000	\$128,843,345
Germany.....	249,391,000	48,132,463	247,529,000	47,773,097
Belgium.....	375,445,000	72,460,885	364,292,000	70,308,356
Switzerland.....	119,521,000	23,067,553	108,147,000	20,871,215
Italy.....	98,851,000	19,078,243	74,562,000	14,390,466
Spain.....	79,133,000	15,272,669	76,923,000	14,846,139
Turkey.....	43,250,000	8,347,250	42,204,000	8,145,372
United States.....	181,098,000	34,951,914	136,002,000	26,248,386
Brazil.....	62,207,000	12,005,951	60,330,000	11,643,690
Argentine Republic.....	49,289,000	9,512,777	42,512,000	8,204,816
Other countries.....	449,177,000	86,691,161	499,224,000	96,350,232
Total.....	2,435,356,000	470,031,428	2,319,334,000	447,641,112

The total diminution in exports during these nine months amounts to 116,012,000 francs (\$22,390,316), which is a loss of 4.8 per cent. The exportations of Great Britain diminished during the same period 2.4 per cent.

Imports during the past three months about hold their own, the increase for the nine months being at about the same figure that it was on the 30th of June, namely, about 335,000,000 francs (\$64,655,000). The imports from the United States have somewhat decreased during these three months, the excess over the corresponding nine months of last year now being a little more than 53,000,000 francs (\$10,229,000), whereas, at the end of June, this excess amounted to 60,000,000 francs (\$11,580,000).

The following table gives the imports into France for the nine months ending September 30, 1893 and 1894:

Countries.	1893.		1894.	
	<i>Francs.</i>		<i>Francs.</i>	
England.....	360,357,000	\$69,548,901	372,870,000	\$71,963,920
Germany.....	232,120,000	44,799,160	220,000,000	42,460,000
Belgium.....	300,492,000	57,994,956	290,231,000	56,014,583
Switzerland.....	48,206,000	9,303,758	47,342,000	9,137,006
Italy.....	101,932,000	19,672,876	102,409,000	19,764,217
Spain.....	159,637,000	30,809,941	131,485,000	25,376,605
Turkey.....	74,631,000	14,403,783	78,974,000	15,241,982
United States.....	228,877,000	44,173,261	281,130,000	54,258,090
Brazil.....	54,339,000	10,487,427	39,285,000	7,601,305
Argentine Republic.....	139,230,000	26,871,390	156,157,000	30,138,301
Other countries.....	1,104,729,000	213,212,607	1,148,617,000	221,683,081
Total.....	2,804,550,000	541,278,150	2,868,600,000	553,639,200

STEPHEN H. ANGELL,  
*Commercial Agent.*

ROUBAIX, November 6, 1894.

## COMMERCE OF FRANCE IN 1893.

If the people of the United States have had reason to complain of hard times for a year or more past, the French, to a certain degree, have been their companions in misfortune. Not that France can not suffer and endure the most pronounced financial depression, and still thrive. The tables recently published by the custom-house, giving an itemized résumé of France's exportations and importations during the year 1893, however, show that there has been a diminution in her commerce amounting to 502,000,000 francs (\$96,886,000). This represents, compared with the previous year, a falling off of 252,000,000 francs (\$48,636,000) in importations and 250,000,000 francs (\$48,250,000) in exportations.

The following table offers a comparison between the years 1893 and 1892 as regards the principal articles of export:

Articles.	1892.		1893.	
	<i>Francs.</i>		<i>Francs.</i>	
Woolen goods.....	328,500,000	\$63,400,500	278,900,000	\$53,827,700
Silk fabrics.....	247,500,000	48,114,900	224,500,000	43,318,500
Wine.....	213,600,000	41,224,800	188,600,000	36,400,800
Articles de Paris.....	157,400,000	30,778,200	154,100,000	29,741,300
Clothing and linen.....	129,600,000	25,011,800	130,800,000	25,104,400
Dress silk and ribbons.....	132,100,000	25,495,300	126,000,000	24,318,000
Wool.....	119,500,000	31,065,500	120,400,000	23,257,200
Cotton fabrics.....	95,500,000	18,431,500	100,500,000	19,366,500
Skins.....	114,100,000	22,021,300	97,300,000	18,778,900
Manufactured leather articles.....	111,700,000	21,558,100	96,000,000	18,528,000
Butter and cheese.....	88,300,000	17,041,900	80,600,000	15,555,800

From the foregoing, it is evident that the only articles of French origin the shipments of which have increased in 1893 are clothing and linen goods, raw wool, and cotton textiles. It will also be observed that, with the exception of woolen goods, the wine industry has suffered more than any other. This, no doubt, was due to the fact that several countries, chief among which was Switzerland, recently imposed the most prohibitive schedule of customs duties on the fermented juice of the grape.

Again, we find from other figures that the exportation of alimentary products, such as preserved vegetables, fruits, meats, etc., has fallen off some 48,700,000 francs (\$9,399,100), or over 6 per cent as compared with 1892.

On manufactured articles, taken as a group, there is a falling off of 137,000,000 francs (\$26,441,000), or 7 per cent as compared with 1892.

Many reasons may be ascribed for this condition of affairs: First, the prevailing business and commercial depression experienced throughout the world; secondly, the country, a little over two years ago, increased the duty on nearly every raw and manufactured article of import discharged at her ports or brought across the frontier, and as goods, to employ an old aphorism, are paid for with goods, either directly or indirectly, the decrease in exports may be explained in this way.

J. M. WILEY,  
Consul.

BORDEAUX, *October 22, 1894.*

## AMERICAN VS. EUROPEAN GOODS IN BRAZIL.

A few foreign importers here make great efforts to convince the people of this consular district that American manufactures can not successfully compete in quality with those of Europe. From personal observation, from information which I have carefully collected, and from comparison of articles manufactured in Europe and the United States, I am able to refute such claims.

*Hardware.*—Very little hardware is imported from the United States, but that which is in use is considered the best, with the possible exception of knives and forks.

*Sewing machines.*—American sewing machines have the reputation of being unexcelled by any imported from Europe.

*Machinery.*—European machinery is greatly objected to on account of the great amount of iron used in its construction, hence its useless weight. The locomotives, for example, are on this account very hard to handle or manage, either in starting or stopping quickly, while the American locomotives are easier to handle, quicker in starting or stopping, pull greater loads up heavier grades, and are much easier to put in order than the English. The American locomotives do not require as much fuel to run them as is required by the English locomotives. On the railroads controlled by Brazilians, more than one-half, at least, of the locomotives are American.

*Cars.*—Passenger cars used on the English railways have the doors on the sides, and passengers are locked up from one station to the other while the train is in motion. The conductor and his men are in a short car attached to the rear end of the train. Before the destination of the train is reached, it stops long enough at some station for the conductor and his men to take up the tickets or collect fares. The American passenger cars are very popular because the people do not like the idea of being locked up from one station to the other and refused free communication to other coaches.

The street-railway cars are all American.

*Shoes.*—There are some shoe manufactories in this district, but they are not doing very much toward supplying the demand. One of these used to buy leather from a firm in France but discontinued doing business with Europe altogether, and now buys from the United States, as it was found that American tanned leather proved more durable than that bought in Europe. Very little business is done in the American shoe trade, but the reputation of the American shoe stands very high among intelligent Brazilians. Shoes made of American leather, either here or in the United States, have proven to be more durable than those of a like quality, or of the same grade made in Europe. There are many Americans here who tell me it is an almost invariable rule that a pair of shoes which cost from \$4 to \$8, made in Europe, will hardly last half as long as a pair of the same grade and quality made of American tanned leather; in other words, a pair of shoes which cost from \$2 to \$4 in the United States, will equal those of a higher grade made in Europe and sold here for double the money.

*Agricultural implements.*—Agricultural implements made in the United States are the best imported here.

*Wines.*—California wines are the only American wines known here, and these are consumed by the well-to-do class. There are many grades imported here from Europe, but only the best of these are preferred to those from California, and this because of acquired taste, and not on account of quality.

*Canned goods.*—I am informed that canned goods with American labels are being shipped here from Europe, which are said to be put up there, because American goods can be imitated with impunity. I am also informed by Americans here, who are well versed on the subject, that whenever American inventions or goods sell well here they are generally imitated in Europe, and imported here and sold as American goods. These imitations can not compete in quality with, but are sold cheaper than, the genuine articles.

HENRY C. SMITH,

*Consul.*

SANTOS, September 12, 1894.

## THE PORT OF SANTOS.

As a sample of the many letters received by me from merchants in the United States making inquiries about Santos, etc., I quote the following extract from a letter under date of April 26 last, from a firm in Portland, Me. :

We note that there is a good demand for lumber in your quarter, and that there is a probability that we might do an important business there, very much, of course, depending upon the financial and social state of the country, as a result of the late, and, as we understand, present insurrectionary troubles, as well as any disturbances which may be occurring on account of the continuance of the fever, it being almost impossible for the present to induce vessels to go to your port, excepting at very high rates.

The revolution being at an end, the country is fast resuming its former settled condition. While, financially speaking, exchange is, at present, very low, the indications point to this becoming the greatest shipping port, with the exception of Rio de Janeiro, in South America.

On account of the greatly exaggerated reports against Santos, it is looked upon by outsiders as being a dead city. To one who knows nothing except what he reads about this port, it is one to which no American vessel should come; but one who will come here and observe what is being done in a business and commercial way, will say that it is one of the greatest business places, and just as free from unhealthiness as any city in Brazil.

It has a population of over 30,000, and it has in course of construction the finest dock for vessels in Brazil. This dock is nearly completed, and is located in that part of the city which, in former years, caused so much sickness; so that, in the once low and unhealthy portion of Santos, bordering on the bay, there now stand three new and very large warehouses, while another is being erected.

An extract from the report of an address printed in the South American Journal, of the 19th ultimo, published in London and devoted to the interests of English investments in South America, has this to say of Santos :

The city of Santos was, a few years ago, in a very unhealthy condition, and suffered from fever and other epidemics, but a notable alteration in this respect has been brought about by the improvements effected by the Harbor and Docks Company. It would be very difficult, indeed, to exaggerate the transformation which had taken place, but he [the speaker] saw several gentlemen in the room who had been out in Santos, and he thought they could testify to what he had stated. The important harbor works were converting Santos into a first-class port, increasing its value commercially, and making it as healthy a place as any on the coast of South America.

Mr. Francis G. W. Peterson, master of the bark *Mary G. Reed*, of New York, and who has just left this port, writes me the following letter dated Santos, May 25, 1894:

As far as I am concerned, I would just as soon come to Santos as to any place on earth where yellow fever is likely to come, and, furthermore, I prefer it to many others. As a proof of my honest opinion, I will merely state that I am now and have been for the last two weeks,

trying to get a charter right back here again. Regarding the merchants and officials of Santos, I have found them gentlemen, and shall be only too glad to renew the acquaintance with any of them in the future. I trust that United States citizens will at all times be as well treated here as I have been.

Upon the same letter I find the following indorsement by Mr. George B. Alley, master of the schooner *Hannah McLoon*, of Rockland, Me., who has also just cleared this port:

SANTOS, *June 4, 1894.*

In addition to the above statement, I can truthfully say since I have come here to this port I have found it to be a much more desirable port for navigation than is universally represented.

Another thing which speaks well for Santos is its suburban additions, Ilha de Santo Amaro—the new Long Branch of Brazil—about  $3\frac{1}{2}$  miles from the city. It is a beautiful village, where can be seen, at all times, some of the leading people of São Paulo. The houses are built of lumber prepared in the United States, and are, therefore, built on the American plan. The place is reached by boat and railroad, the material for which was imported from the United States. This village is attracting the attention of nearly all Brazil.

Santos is growing very rapidly, but not enough to keep good houses for dwellings from being, as it were, at a premium.

The English are reaping a big harvest here, while the Americans are staying away on “account of the yellow fever”—which Santos has not.

HENRY C. SMITH,

*Consul.*

SANTOS, *June 12, 1894.*

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## UNITED STATES TRADE WITH URUGUAY.

Uruguay, as well as all the South American republics, being more or less dependent upon other countries for manufactured articles, the question arises, why should not the United States be able to supply a proportional part of these wants? This may be answered by the counter question, do we not supply these countries with our proportional part of products and about the same quantity that we are taking from them in exchange? To all of which we can only reply by referring to our trade with these republics as compared with the trade of Europe therewith. It is hardly necessary to state that the comparison is not in our favor. The consular reports of the last decade have demonstrated this fact too often to leave room for any doubt thereon.

Going one step farther, and comparing our articles of export with those from the European countries to these republics, we find ourselves placed at a still greater disadvantage. It remains to be seen whether we desire to change positions hereafter and get on an equal footing with Europe, or remain where we are and have been.



The European markets are furnishing South and Central America with about everything, for the manufacture of which large bodies of laborers are required, thereby benefiting not only the merchants who do the trading, but the entire commonwealth. We, on the other hand, sell raw materials almost exclusively, and staple articles for the supply of which the world is, more or less, dependent upon the United States, and in the manufacture of which but few people, relatively, are employed and benefited thereby.

Petroleum, lumber, and resin are the principal articles of export from the United States to these republics. The export from the United States of a few kinds of manufactured goods, such as agricultural machinery and implements, goes to prove that we are able not only to compete with European manufacturers, but even to meet them on their own ground in some of the most important branches. Why, then, should we hesitate to make a bid for competition, on neutral ground, on any article of manufacture where it is evident that we have the advantage of raw materials, together with labor fully equal, to say the least, in skill to that of Europe?

I allude here to everything in the line of cotton goods, as well as everything made of wood—wagons, carts, carriages, pianos, organs, furniture, etc.—manufactures in which our people are so inventive and practical.

The old and worn-out cry that European manufacturers are able to produce more cheaply than we can will not hold good any longer with anyone who is able and willing to take the trouble of investigating, and all that is left of it is to be found in a new phrase gotten up for the purpose of upholding European manufactures here as against American manufactures. For instance in the case of cotton goods, Europeans claim better and more suitable styles, according to taste and requirements.

To what extent this may be true I can not tell, as taste and style are things wherein everybody can claim to be his own sovereign. All that would be necessary, however, for the American manufacturer to do would be to study the taste of the people here in order to meet the requirements and to be up with his European competitors.

The greatest part of the import trade here being, so far, in the hands of Europeans, the arguments used against American cotton goods, no doubt, serve them in numbers of other articles of manufacture, and this naturally works against American interests and the progress of our trade.

A number of the mercantile firms here and in the neighboring republics are mere branches of European houses or manufactories, and this explains the jealousy with which they are watching any progress made by the Americans for the enlargement of their trade. While they have no objection to the sale of American petroleum, lumber, resin, and even farming implements, they are doing their best to cultivate a dislike of every American manufacture, and not until our merchants and manufacturers prepare to meet these opponents on equal ground will the latter be able to capture a trade which, by right, ought to be supplied by them and not by Europeans.

The question, therefore, is how can we win our share of the trade in all the South American republics, as well as in Uruguay.

Let the American merchant and manufacturer be just as accommodating as his European competitor in the manufacture and get-up of his goods, in the terms of sales, and in the way he places his goods before the trade. Let him adopt the *modus operandi*—or rather improve upon it if he can—of his competitors.

This Oriental Republic of Uruguay—and the same is true of nearly all the South American republics—is very rich in resources of a productive character, but comparatively poor so far as industrial enterprises are concerned. It will take a great many years before this country will be able to have sufficient manufactories of its own to supply its needs, which may be partly accounted for by the want of cheap coal. Thus, the principal wealth of this country, for a long time to come, will depend on the products of its soil, which readily find markets in exchange for the articles of manufacture wanted here.

The great anxiety with which the question of free entrance of wool into the United States has been watched here, and the frequency with which I have heard men of note and influence express the hope that, with free wool, the general commercial relations with our country would increase, are evidence of the growing conviction that joint and mutual interests will unite in the future all the republics of the American continent.

Taking it for granted that increased trade relations between the United States and South America are not only desirable but necessary for the future development of the entire American continent, it remains to be seen how much of this may be accomplished in the way of treaties and conventions, and how much must be done by the individual who desires to profit by such relations.

What each individual will have to do in order to share in these profits I have attempted to point out, to some extent, as far as it is possible to do from a theoretical standpoint; the remainder must be practically worked out. It may be added that, perhaps, the first step to be taken in order to form a solid and proper basis for increased commercial intercourse should be the establishment of an American banking institution here, and, taking into account the enormous rate now paid here for exchange, I have no doubt that such an institution would prove a safe and profitable venture.

With travel even as it is now between the United States and Uruguay, I should think a bank would do fairly well even if it would only do exchange business. Thus far, nearly all of this business has been transacted through foreign banks—English chiefly. In other words, we are paying England a tribute on the business that we are doing with this country.

As long as we have to depend upon foreigners to do our freighting, we can not expect to capture trade in which they themselves are interested. As long as we have our passengers, our mail, and the bulk of the imports and exports between these countries and the United States carried by English,

French, and German steamers, we can not hope to secure the preference in a trade so entirely in the hands of these carriers.

In the matter of the enlargement of American trade with Uruguay, the question of transportation is one of the first to be settled. This is fully recognized by the citizens of the Republic of Uruguay, and the proof for this assertion is the fact that the idea of the construction of the International Railway to unite the two Americas originated with a citizen of this Republic. The great work compiled by Juan José Castro, the present Minister of Fomento of Uruguay, giving a full description of all the railways existing or surveyed and planned, in South America, together with an excellent map of the same—a work justly awarded the gold medal at the World's Columbian Exhibition at Chicago—is another striking evidence of the readiness of the people here to enter into closer connections with the United States.

EDGAR SCHRAMM,

*Consul.*

MONTEVIDEO, *September 15, 1894.*

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### MONTEVIDEO HARBOR IMPROVEMENTS.

Ever since South America has been known to the civilized and trading world, Montevideo has occupied a prominent place in the eyes of maritime nations, not alone on account of its harbor, but more on account of its unsurpassed geographical location, making it the natural seaport and distributing center for an immense territory.

With a vast, rich country back of it, at the mouth of one of the largest rivers in the world, with easy access to Brazil, the Argentine Republic, Paraguay, and Bolivia, with a climate as fine as can be found anywhere, making it unquestionably the healthiest place on the South American continent, all it needs is to have its harbor put in such condition as to allow heavy-draft vessels to enter and find protection from the winds which make the stay and discharge of vessels at the roads here at present very often undesirable, and even dangerous.

Long as Montevideo has been known as a shipping center, nothing has ever actually been done to improve its harbor. The result is that the matter carried down by the great River Plate for ages into the Bay of Montevideo, has settled there and finally filled up this once, undoubtedly, very deep basin. Taking further into consideration the amount of refuse of a city of more than 200,000 inhabitants, which, to a great extent, is dumped into the bay, it is no wonder that it is gradually becoming shallow, to the detriment of its value as a harbor of international importance.

The Government of Uruguay has now to choose between saving this great harbor or losing for the Republic all prospects of a prosperous future. The Government has been convinced for upwards of twenty-five years that steps ought to be taken to protect the Montevideo harbor from the dangers threat-

ening it, and to make it accessible and commodious for deep-water going vessels. Although long under discussion, it never came to a definite resolution. Recently, it has been taken up again by the new Administration, as I hope, in good earnest. Congress, instigated by the Executive and others taking an interest in the matter, has appropriated \$150,000 for the survey and study of the harbor and for the definition of plans, according to which the improvements will ultimately be made, by a board of engineers, to consist of native talent and one or two foreign experts.

It is my firm conviction that the United States, before all other nations, have the greatest interest in the execution of this work, as it will give them a safe and healthy naval station for the South Atlantic squadron, and tend to secure to us, especially if it be completed by the assistance of American skill and perhaps capital, the preponderance in commercial and industrial matters not only in this Republic, but all over South America. I have, therefore, taken pains to gather all possible information relating to this port project from its very beginning up to the present time, and herewith attach a description of the various plans and projects\* proposed at different times, together with a history of the plans through which the matter passed before the Government and Congress, as well as the last law under which it is supposed it will now be carried out.

On July 13, 1894, a law was passed and signed by the President on the next day, authorizing the Executive as follows:

ARTICLE 1. To appoint a special commission to be composed of the national department of engineers, and one or two foreign engineers of known competence in hydraulics, who must have had practical experience in port works in order to be able to make the necessary studies of the port and bay of Montevideo, especially as to the necessity and practicability of constructing exterior works for the protection of the bay, and whether the cost of their construction would not be out of proportion to the commercial movements of the port; for the projection of the most convenient situation for a port in the bay of Montevideo, which would be always safe, convenient, and economical, to be constructed by sections so as to allow for future amplifications, to be adjusted, if possible, on the following general lines: (a) The preference for the location of the *darsenas* (docks) to be given to the northern and western shores of the city; (b) the area of the outer port not to be less than 250 hectares (618 acres); the minimum width of the *darsenas* 2,000 meters (2,215 yards), and the minimum length of the quay 8,000 meters (8,749 yards); (c) the depth of the port, outer port, and entrance channel to be 21 feet in ordinary low water.

To investigate the best and most economical means for keeping the depth of water indicated; to place the outer works so as to prevent the sewage or drainage of the city from flowing into the bay, and to perfect the best system of railway tracks, roads, machinery, etc., in connection with the loading and unloading of vessels in the harbor; to formulate, in detail, all plans of the work and estimates of their cost.

ART. 2. The Executive is authorized to invest up to \$150,000 in the construction of all the works enumerated in article 1, or to contract with some hydraulic construction company which has already constructed important port works, for the completion of the works under the technical supervision of the special commission. If the definite concession should be granted to such company, the cost of the studies and of the plans will be included in the cost of the works to be constructed. Said costs shall, in no case, exceed \$150,000, including the remuneration of the foreign engineers referred to in article 1.

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\* Plans, projects, and history sent to the Bureau of Naval Intelligence, Navy Department.

ART. 3. When the definite plans and specifications of the project are concluded, the Executive will lay all the antecedents before the General Assembly, in order that the latter, if it so desires, may approve the same and make the necessary appropriations for the execution of the works.

ART. 4. When the project is approved, public proposals will be invited for the construction of the works in accordance with the conditions established by law, for which purpose the detailed plans and conditions will be published; the Executive to accept the proposals which he may consider most favorable as to price and the ability of the bidders to complete the works.

Thus the matter stands at present. The Government is now going to appoint the special commission of engineers to be charged with the definite study of the problem.

EDGAR SCHRAMM,

MONTEVIDEO, *September 15, 1894.*

*Consul.*

## NORTH SEA AND CHANNEL PORTS.\*

With a view to furnishing arguments for the necessity and the advantages of the projected harbor at Heyst, to be connected with Bruges by a maritime canal, a work entitled "*Le Port de Vitesse de Heyst*" ("the express port of Heyst"), has recently been published. Its authors MM. Nyssens, Hart, and Zane, civil engineers, have compiled numerous interesting tables of the commerce and maritime facilities of various leading seaports on the northern coast of the European continent. By permission of the authors, I am enabled to give an outline of several chapters of this book, which may not be unprofitable, as it embraces statistics of considerable importance.

### THE NECESSITY OF BELGIUM.

In the preface, the necessity of a suitable harbor on the Belgian coast is discussed. In this proposition, all patriotic Belgians are agreed. Whether it be by the enlargement and improvement of the existing harbors at Ostend or Heyst, or elsewhere on the coast, or by the construction of an outer harbor, even perhaps within Dutch territory, dependent upon and serving Antwerp, Brussels, or Ghent, is the question which has evoked much discussion. It is not my purpose here to commit myself to any one of these various projects, but simply to employ this occasion to show that the part taken by Belgium in the commerce of the world might be vastly increased. To this latter proposition there will not be any dissent.

### TRANSFORMATION OF NAVIGATION.

After devoting the first chapter of the history of the project of a harbor at Heyst, the vast transformation in maritime navigation during recent years is fully discussed. The change from sail to steam has been most pronounced. The increasing necessity of regularity is exterminating the sailing vessel.

The following table indicates, according to "*Veritas*," the number, total, and average tonnage of all steamers above 100 tons, and of all sailing vessels

\* Accompanying this report are a number of diagrams of the harbor improvements described. These have been filed in the Bureau of Statistics, Department of State.

above 50 tons, at various epochs. The figures of the past five years are especially noteworthy.

*Merchant fleet of the world.*

Year.	Sailing vessels of more than 50 tons net.			Steamers of more than 100 tons net.		
	Number.	Tonnage ("Mourson").		Number.	Tonnage ("Mourson").	
		Gross.	Average.		Gross.	Average.
1874-'75	56,727	14,563,868	257	4,335	3,680,670	849
1875-'76	57,258	15,509,001	267	5,519	5,364,492	972
1876-'77	58,208	15,553,368	267	5,771	5,686,842	985
1877-'78	51,912	14,799,130	285	5,471	5,577,659	1,006
1878-'79	49,529	14,318,072	289	5,462	5,595,175	1,024
1879-'80	49,024	14,113,605	287	5,897	6,179,935	1,048
1880-'81	48,584	13,872,881	284	6,372	6,745,198	1,055
1881-'82	49,037	13,911,915	284	6,857	7,475,851	1,090
1882-'83	48,487	13,739,970	283	7,304	8,404,932	1,151
1883-'84	48,074	13,647,877	284	7,764	9,232,096	1,189
1884-'85	44,734	13,010,879	288	8,433	10,209,468	1,210
1885-'86	43,662	12,867,375	294	8,394	10,269,504	1,223
1886-'87	42,545	12,571,384	295	8,517	10,463,958	1,217
1887-'88	41,281	12,174,016	295	8,718	10,632,722	1,231
1888-'89	39,663	11,636,289	293	8,835	11,045,937	1,250
1889-'90	37,567	11,081,197	295	9,256	11,913,371	1,287
1890-'91	33,879	10,540,051	311	9,638	12,825,707	1,331
1891-'92	31,666	10,217,909	323	10,103	13,805,023	1,366
1892-'93	30,711	10,093,749	361	10,632	14,380,036	1,343
1893-'94	29,756	9,829,063	330	10,619	15,134,436	1,425

NAVIGATION AT ANTWERP AND ROTTERDAM.

*Vessels entered.*

Year.	Antwerp.				Rotterdam.			
	Sailing vessels.		Steamers.		Sailing vessels.		Steamers.	
	Number.	Tons.	Number.	Tons.	Number.	Tons.	Number.	Tons.
1880	1,468	612,991	3,153	2,504,763	922	559,332	2,581	3,632,152
1881	1,147	515,287	2,963	2,423,194	835	504,412	2,668	3,670,977
1882	1,149	507,772	3,292	2,945,522	763	454,171	3,075	4,517,477
1883	989	417,860	3,700	3,440,074	761	508,734	3,132	4,906,056
1884	935	557,698	3,874	3,544,365	780	591,089	3,308	5,609,548
1885	958	416,807	3,240	2,971,984	704	673,253	3,253	5,579,860
1886	823	418,853	3,126	2,998,285	734	636,182	3,222	5,697,552
1887	799	425,775	3,374	3,239,657	773	742,111	3,636	6,522,360
1888	770	362,516	3,502	3,528,331	676	618,587	4,017	7,239,167
1889	765	304,661	3,619	3,778,548	570	549,093	4,201	7,591,760
1890	685	259,731	3,857	4,239,313	471	507,967	4,064	.....

To the increased speed, regularity, and fixed voyages occasioned by the general introduction of steam as the motor power, it is not necessary to refer, the vast improvement which has occurred within the past quarter of a century being so well known. The tables, however, are characteristic of the transformation.

## STEAMSHIP COMPANIES.

*Cunard line.*

Names of steamers.	Date of construction.	Means of propulsion.	Engines.	Consumption of coal per passage.	Cargo.
				<i>Tons.</i>	<i>Tons.</i>
Britannia.....	1840	Wheels.....	Low pressure.....	570	224
Persia.....	1856	...do.....	Average pressure..	1,400	750
Gallia.....	1879	Screw.....	Compound.....	1,836	1,700
Umbria.....	1884	...do.....	Triple expansion..	1,900	1,000
Campania and Lucania.....	1892-'93	2 screws.....	...do.....	2,900	1,620

Names of steamers.	Passenger accommodation.	Horse-power.	Effective pressure of boilers.	Consumption of coal per horse-power.	Maximum speed.
	<i>Number.</i>		<i>Pounds.</i>	<i>Pounds.</i>	<i>Knots.</i>
Britannia.....	115	710	1.39	5.03	8.5
Persia.....	250	3,600	5.11	3.75	13.1
Gallia.....	320	5,000	11.62	1.87	15.5
Umbria.....	1,225	14,500	17.04	1.87	19
Campania and Lucania.....	1,700	30,000	25.57	1.48	22

*General Transatlantic Company.*

Names of steamers.	Date of first service.	Means of propulsion.	Length.	Width.	Draft.
			<i>Feet.</i>	<i>Feet.</i>	<i>Feet.</i>
Le Percire.....	1866	Screw.....	330	44	22
Le Labrador.....	1875	...do.....	394	44	24
La Normandie.....	1881	...do.....	459	50	24
La Champagne.....	1880	...do.....	492	52	24
La Touraine.....	1891	2 screws..	517	56	24
La Lorraine.....	1892	...do.....	587	58	24

Names of steamers.	Displacement.	Total motor power.	Speed.	Average length of voyage.	Passenger accommodation.
	<i>Tons.</i>		<i>Knots.</i>	<i>Days.</i>	<i>Number.</i>
Le Percire.....	5,080	3,400	14	9	370
Le Labrador.....	7,715	3,800	13.2	10	890
La Normandie.....	9,657	7,000	15.5	8½	1,137
La Champagne.....	10,010	8,000	17.5	7½	1,089
La Touraine.....	11,685	12,000	19	7	1,090
La Lorraine.....			21	6½	1,150

## SUITABLE HARBORS.

In reading the foregoing statistics, it must not be forgotten that the larger and more expensive the vessels, the better equipped and more favorably situated must be the ports of entrance and departure. With the progress of maritime architecture, the correlative improvement of harbors must keep pace. It is exactly in this particular that Belgium (likewise Holland) is

deficient. Without the proper landing and anchorage places, fitted for these modern ocean racers, both these countries must always remain behind in international commerce.

In railway facilities, speed and comfort, Belgium certainly is equal to any continental nation. In the manufacture of engines and machinery, it holds first place. Give the country an available port, and very soon it will apply all these means to the increase of its maritime and commercial importance. Rapidity of transportation is the essential question of the day, but without large and costly ships, provided with all modern appliances, the problem is unsolvable.

## RAILWAY SPEED.

As showing the improvement in locomotion which has been accomplished by the railway, the time required for the journey to the following named cities at different periods is instructive :

Paris to—	1834.	1854.	1894.
	<i>Hours.</i>	<i>Hours.</i>	<i>Hours.</i>
Calais (183 miles).....	28	6.40	4.00
Lille (156 miles).....	28	4.50	3.20
Strasbourg.....	47	10.40	9.52
Nice.....	98	65.30	20.20
Marseilles (536 miles).....	80	39.20	13.44
Bayonne.....	64	27.45	12.00
Havre (141½ miles).....	17	5.15	3.30

The average railway speed (miles per hour), stops being deducted, obtained in England, has been 44.49, 49.34, 51.33, and 53.44 in 1873, 1883, 1889, and 1893, respectively.

Between Berlin and Hamburg, the speed obtained in 1893 was 51½ miles per hour. These figures approach most nearly to that obtained last year in the United States.

The speed in France has been 38.52 miles, 43.25 miles, 44.74 miles, and 51 miles in 1873, 1883, 1889, and 1893, respectively.

As soon as a constant speed of 74½ miles per hour is attained, European journeys will be insignificant. The time tables will then read: From Paris to Marseilles (536 miles), seven hours; Bordeaux (359 miles), five hours; Belfort (275¼ miles), three hours and forty-five minutes; Havre (141½ miles), two hours; Lille (156 miles), two hours and fifteen minutes.

## WINNING COMMERCE.

The ports situated on the North Sea and on the English Channel have invaded the realm where Belgium had almost a monopoly. During the past ten years, France, Germany, and Holland have made great sacrifices to attract and retain commerce. It is now understood everywhere that the time of prosperity without struggle is past. Nothing possible for the improvement of harbor facilities has been forgotten or left undone. Millions



have been spent in the execution of maritime works. Omitting Antwerp, the principal ports of this territory are Hamburg, Cuxhaven, Bremerhaven, Nordenham, Amsterdam, Hook of Holland, Rotterdam, Dunkirk, Havre, Boulogne-sur-Mer, and Southampton. Each of these is exerting every effort to draw commerce to itself, and any new port must compete with all of them.

#### PORT OF HAMBURG.

The port of Hamburg is situated on the Elbe,  $6\frac{1}{2}$  miles from Cuxhaven, which serves as an outer harbor at the mouth of the river. The length of the quays is  $9\frac{1}{3}$  miles. The water area covers 741 acres (of which one-half is devoted to canals and basins), and the area of platforms occupied amounts to 1,730 acres, so that the size of the free port is not less than 2,470 acres. These figures show why Hamburg, with its spacious basins, has recently taken a preponderating position among the continental ports. We should also not forget that there are neither locks nor bridges, but wide quays, with excellent equipment, floating warehouses, and even numerous moorings in the river. The depth of the principal basins does not, however, exceed 20 feet 7 inches at ordinary low tide, and 27 feet at high tide.

The basins are of comparatively recent construction; they were commenced in 1866, and, since then, their number has been continually increased. They are arranged in the form of a fan on the banks of the Elbe. Fourteen dry docks and other floating docks are owned by private corporations. The results obtained at Hamburg are, in a great measure, due to this remarkable organization, which has permitted a vast reduction in the charges and dues, as well as to the admirable arrangement of the basins and quays branching out obliquely from the river, and everywhere accessible with ease at all times.

*Commerce.*—The following comparative table of the commerce of Hamburg and Antwerp shows at a glance the advantage of the former over the latter:

#### *Arrivals of vessels.*

Year.	Hamburg.		Antwerp.	
	Number of vessels.	Tons.	Number of vessels.	Tons.
1861 to 1870*	5,092	1,260,765		
1871 to 1880*	5,502	2,206,254		
1881 to 1885*	6,430	3,324,000	4,198	3,388,681
1888.....	7,254	4,355,511	4,823	3,880,539
1889.....	8,079	4,809,892	4,356	4,050,549
1890.....	8,176	5,202,825	4,532	4,517,698
1891.....	8,673	5,762,369	4,461	4,693,238
1892 (cholera at Hamburg and Antwerp).....	8,569	5,639,010	4,321	4,500,091
1893.....	8,792	5,886,000	4,818	4,686,233

\*Average per year.

In twenty years, the traffic of Hamburg has quintupled; in ten years, it has doubled. Germany is seeking transoceanic relations. How well it is succeeding is evident from the statistics of vessels arriving at Hamburg from American, African, Asiatic, and Oceanic ports.

Year.	Number of vessels.	Tons.
1861 to 1870*	502	206,838
1871 to 1880*	832	510,899
1881 to 1885*	1,066	959,114
1888.....	1,091	1,229,935
1889.....	1,135	1,347,918
1890†.....	1,244	1,666,801
1891†.....	1,356	1,925,099
1892 (cholera at Hamburg).....	1,366	2,012,686

\*Average per year.

†The Hamburg-American Company enlarged its fleet in 1890 and 1894.

According to the Hamburg Chamber of Commerce, the value of merchandise imported from transoceanic and European ports has been as follows:

Year	Transoceanic.	European.
1876 to 1880*	\$67,447,534	\$137,771,298
1881 to 1885*	81,193,224	144,165,882
1886 to 1890*	110,430,142	152,002,270
1890.....	168,120,820	159,748,282
1891.....	198,276,134	163,816,828
1892 (cholera at Hamburg).....	203,797,358	150,627,582

\*Average per year.

The increase in extra European trade relations has been enormous.

Statistics show that the number of vessels engaged in transatlantic commerce arriving at and departing from Hamburg has been:

Year.	Arrivals.	Departures.
1889.....	574	674
1890.....	742	821
1891.....	815	938
1892 (cholera at Hamburg).....	893	849

These results, however, have not been reached without immense expense. Before 1883, there had been spent in the improvement of the port of Hamburg \$4,678,465, and since 1883, \$34,740,000. In spending these vast sums, Hamburg has especially provided for regular steam navigation. The figures giving the result indicate the percentage of steamers and sailing vessels, as well as the relative amount of their tonnage.

*Percentage of steamers and sailing vessels and their tonnage.*

Year.	Vessels.		Tonnage.	
	Sailing vessels.	Steamers.	Sailing vessels.	Steamers.
	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>
1846 to 1850*	88.9	11.1	79.9	20.1
1851 to 1860*	80	20	65.5	34.5
1861 to 1870*	66.4	33.6	37.2	62.8
1871 to 1880*	48.1	51.9	23.5	76.5
1881 to 1885*	38.8	61.2	18.5	81.5
1886.....	32.7	67.3	15.5	84.5
1888.....	30.7	69.3	14.6	85.4
1889.....	28	72	12.5	87.5
1890.....	26.5	73.5	11.9	88.1
1892.....	28	72	11.7	88.3

\*Average per year.

For Belgian ports, the figures are:

Year.	Vessels.		Tonnage.	
	Sailing vessels.	Steamers.	Sailing vessels.	Steamers.
	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>
1880.....	35.5	64.5	21.7	78.8
1892.....	13.1	86.9	5.5	94.5

*Hamburg's disadvantages.*—Hamburg, however, is too far from the sea, and the Elbe is a river whose channel offers many important defects. For example, on the Blankenese bar, where there is constant dredging, the depth at low tide is only 18 feet, and at high tide 24 feet. The Hamburg senate, in 1892, proposed spending \$1,904,000 on the improvement of the Lower Elbe. In winter, the ice often presents serious difficulties to navigation. In 1869'–70, river traffic was totally suspended for twenty-three days, in 1870'–71, for sixty-one days, and in 1876'–77, for six days.

## PORT OF BREMERHAVEN AND NORDENHAM.

Bremerhaven, the rival of Hamburg, is situated at the mouth of the Weser, 43 miles from Bremen, which established this port to prevent its own decline—its commercial annihilation it might be said.

The correction of the Weser, undertaken in 1883, which cost Germany \$7,140,000, has been lately brought to a successful conclusion. Bremen itself has become a port for vessels of small draft; those drawing 16 to 17 feet can enter. In 1850, the depth was only 40 inches, and in 1864, 9 feet 10 inches. Up to Brake, there is at present 22½ feet at low tide. At the port of Bremerhaven, vessels drawing as much as 24 feet can always enter at Kaiser Hafen.

The outlay in recent years for the improvement of the estuary of the Weser has amounted to \$3,808,000. A new basin is under construction for transatlantic liners. It forms an extension of the Kaiser Hafen, and will be in communication with the roadstead by a lock 656 feet in length and  $79\frac{1}{2}$  feet in width, accessible to vessels of 30 feet draft. The works under execution will cost several million dollars. Every basin at Bremerhaven has its own separate lock, and the Kaiser Hafen, when completed, will have two.

The North German Lloyd has established its landing place at Nordenham, 6 miles up the river from Bremerhaven. The traffic of this most recent port amounted to 209,544 tons in 1892, against 18,986 tons in 1890. Its establishment has aroused Bremerhaven to new exertions to increase and improve its facilities. Indeed, it is remarkable how at Bremerhaven, a town of 15,000 inhabitants, situated in a desolate district, without the advantage of a location naturally favorable to commerce, a maritime movement of 1,000,000 tons per annum has been built up.

#### PORT OF CUXHAVEN.

The port now in construction at Cuxhaven will have a depth of 27 feet 11 inches at low spring tides. The basins will be in free communication with the river. The entrance will be 328 feet wide. The port reserved for evolutions will be 984 feet in length by 820 feet in width. The basins will measure 984 by  $262\frac{1}{2}$  feet; the platforms, 394 by  $262\frac{1}{2}$  feet. A dry dock 65 feet wide by 590 feet long is proposed. There will be constructed in the beginning about 3,280 feet of quays. The completion of the port of Cuxhaven is set for 1896.

#### PORT OF AMSTERDAM.

It is only since 1876 that the port of Amsterdam has been connected with the North Sea by a deep canal  $14\frac{3}{4}$  miles in length, affording, ordinarily, a depth of  $25\frac{1}{4}$  feet, sometimes even 26 feet. This canal is now being deepened, and will, in a few years, have a normal depth of 28 feet below the water line, so that it will permit the entrance of vessels of the greatest draft.

The new lock, at its entrance from the North Sea, decreed in 1887, will probably be finished during this year. Its dimensions are: Length, 738 feet; width, 82 feet; depth, 31 feet, on the miter sills. The largest vessels can be accommodated.

The two locks heretofore in use have proven insufficient. Their dimensions are 394 by 59 and 26 feet, and  $229\frac{1}{2}$  by  $39\frac{1}{3}$  and  $16\frac{1}{2}$  feet. The entrance channel, at the old port of Imuiden, affords a width of 328 to 656 feet, and a depth of about 26 feet at low tide. The average flow of the tide is 5 feet 3 inches. The entrances to the port of Amsterdam are thus well adapted to large ships. In the North Sea Canal, the transverse section is not proportionate to the dimensions of the new lock, and it must be navigated slowly, at a speed not exceeding  $5\frac{1}{2}$  miles per hour. Whatever increase

in rapidity may be attained in the future, the passage of the locks will always prevent Amsterdam from becoming a transit port for express steamers, but the improvements now being made will transform the North Sea Canal into a navigable highway of the first order.

Although the works of the outer harbor of IJmuiden and of the maritime canal have cost \$17,370,000, the expense required for the new lock, the enlargement and the deepening of the canal have been decreed. While money is being appropriated for the roads of access, the port of Amsterdam is growing and is equipping itself so as to take rank among the first of Europe. The government of the city has spent the sum of \$3,860,000 for new installations. Its population is now 400,000. There has been constructed the Handelskade—the quay of commerce—with a length of 6,890 feet, along the side of which the water has a normal depth of 26 feet. It is the landing for the East Indian lines. The transatlantic steamers moor at the great docks along the Y, near the Port au Bois.

The lumber basin, which has an extent of 259½ acres, was completed in 1883. A depth of 23 feet is found within an area of 52 acres. The petroleum trade has also special and recent installations surrounding a horseshoe-shaped basin, at the extremity of the port. The water surface measures 37 acres, with a depth of 25¼ feet. The basins encroaching upon the roadstead of the Y indicate the enlargements projected. The port of Amsterdam, like Hamburg, is fitted in a superior manner for the demands of modern navigation.

In 1879, 261 ships entered, with a net tonnage (Mourson) of 577,511; in 1891, 212 ships with a net tonnage (Mourson) of 1,238,863; and in 1892, 226 ships with a net tonnage (Mourson) of 1,395,173. Deep-sea navigation now constitutes one-third of the total tonnage of Amsterdam.

The arrivals from American ports are also interesting to note. During 1891, 4 vessels of 30,521 tons arrived from Baltimore, and 19 vessels of 130,455 tons arrived from the same port in 1892. In 1891, 31 vessels of 217,334 tons arrived from New York, and 48 vessels of 349,548 tons from the same port in 1892.

#### ROTTERDAM AND THE HOOK OF HOLLAND.

Rotterdam has become the greatest port of Holland; it is also the most redoubtable competitor of the Belgian commercial metropolis. The city is situated at a distance of 20½ miles from the mouth of the Meuse. The rise of Rotterdam is due to a gigantic work—the regulating of the Meuse and the opening of a new mouth across the Cape of Holland—an enterprise which, commencing in 1863, has been pursued with a constancy of purpose, and has cost about \$17,300,000.

In 1868, the new passage to the sea was cut to a width of 33 feet and a depth of 6½ feet at low tide. It was opened to navigation in 1872. The flow of the tides, however, failed to deepen it sufficiently. Since then, by continual dredging, straightening, and other means, efforts have been made

to maintain a fixed channel, to prevent the formation of banks, and to preserve the depth. The quantity of earth dredged has been 52,300,000 cubic yards, and that which has been brought down by the currents has not been less than 13,000,000 cubic yards. Immense jetties, 7,546 feet in length, at a distance of 2,296 feet apart, have been constructed at the mouth of the river at the Hook of Holland. The result of this correction is the depth of  $21\frac{1}{3}$  feet at low tide at all parts of the Nieuwe Waterway, and a practicable channel of 394 to 820 feet in width. Vessels drawing  $25\frac{1}{2}$  feet can now make the entry in two hours.

The mouth of the river itself is considerably improved. The least depth at low tide is 26 feet, and since 1893 the continental route via the Hook of Holland has been established. During the first year, 10,000 passengers were carried.

The improvement of the Nieuwe Waterway has caused an enlargement of the port of Rotterdam. For the establishment of new quays and basins, \$8,685,000 have been spent since 1874. Both banks of the river have been used. On the right bank are situated the ancient and more shallow basins. On the left, numerous basins have been constructed, whose area is about 136 acres, with a depth of 23 feet. The total area of the basins of Rotterdam amounts now to about 272 acres, with quays 13 miles in length.

In the roadstead, there are fifty-six moorings, and twenty-six transatlantic liners can there unload into the Rhine boats whose size now reaches up to 2,500 tons.

By these figures, it is easily seen that Rotterdam has followed the example of Hamburg. Its wharves are considerable, its basins are large, and its petroleum ports are in direct communication with the river. There are no locks. These installations, provided with every modern appliance, tend to facilitate traffic, and to render maritime operations easy and rapid.

The following table gives the arrivals of vessels at Rotterdam during seven years. In that time, as will be seen, there was an increase approximating 50 per cent:

Year.	Vessels.	Tons.
1885.....	3,724	2,120,347
1886.....	3,663	2,202,752
1887.....	4,153	2,488,284
1888.....	4,528	2,721,479
1889.....	4,547	2,809,203
1890.....	4,535	2,918,425
1891.....	4,467	3,008,779
1892.....	4,423	3,120,698

In 1891, 105 ships, each drawing more than 22 feet, navigated the Nieuwe Waterway; in 1892, the number was 142.

The tonnage arriving from the United States in 1888 constituted 5.26 per cent of the total; in 1892, it was 18 per cent.

The arrivals of extra European steamships were:

Year.	Number.	Tons.
1890.....	226	1,521,586
1891.....	294	2,091,093
1892.....	411	2,966,007

Traffic with distant countries represented 26 per cent of the total.

The port of Rotterdam will, without doubt, continue to rapidly grow in importance.

#### PORT OF DUNKIRK.

This port is considered by France as the natural port for the northern and eastern portions of her territory. In the programme for the improvement of ports, introduced by M. de Freycinet, this consideration had great influence. Dunkirk is nothing like what it was in 1880, and the plan of the new floating docks indicates that it is to be one of the great ports. Although the basins are only accessible by means of locks, still there are five of these at the outer harbor.

The northern lock, which has just been completed, measures 82 feet in width, 581 feet in length, and has 35½ feet of water on the sills at spring high tides. The western lock measures 384 feet by 69 feet, with a depth of 24½ feet. The de Freycinet basins finished in 1885, and provided with two locks, are arranged in a most rational manner for facilitating the maneuvers of large steamers. They also have all possible accommodations and appliances. They afford a water area of 5,645 acres, and quays more than 3 miles in length.

The total of the floating docks and platforms covers more than 247 acres, and affords more than 6 miles quay room. There are 22 miles of railway track.

The port of Dunkirk is approached by a dredged channel, having a depth of 26 feet at spring high tides. Formerly the width was only 230 feet, but recently it has been widened to 426½ feet in order that vessels can enter it more easily and turn before the northern lock. For these various improvements it has been necessary to expend \$21,230,000. That the results have justified the labor and expense may be readily observed from statistics. In 1880, the total movement of this port was 1,651,896 tons; in 1891, it was 3,177,141 tons. In 1882, the number of vessels with a draft of more than 19½ feet was 83; in 1891, the figure was 299. Among the arrivals for 1891, we find 1,303 vessels, of a total tonnage of 555,338 tons coming from European ports, and 324 vessels of 499,995 tons arriving from distant countries.

#### PORT OF HAVRE.

Havre, situated at the mouth of the Seine, 179 miles distant from Paris, occupies an incomparable situation for the commerce of an important por-

tion of France. This port is especially suitable for the transatlantic express steamers. As compared, however, with the ports already described, Havre is far behind in the advantages so essential to its growth. Its interior basins open on a narrow channel, and its outer harbor is relatively small and shallow. There are also many quays entirely destitute of railway tracks.

The ancient basins of "Commerce," of the "King," of "Barre," and of "Florida," are abandoned to interior traffic. The basins of the "Citadel," "Vauban," the "Dock," the basins "Eure" and "Bellot" alone are suitable for the coasting trade and deep-sea vessels.

The transformation of the port of Havre has been studied since 1884. In a memoir dated November 7, 1892, the engineer in chief, Mr. Vétillart, says in substance:

The entrance to the port of Havre lacks depth. Its anchorage does not exceed  $34\frac{1}{3}$  feet depth at the average spring high tides, reduced to  $26\frac{2}{3}$ , and, even, occasionally 24 feet at high neap tides. Most vessels can enter and depart only during three hours at each tide. The turning of the large transatlantic packet boats is slow and difficult, and during that time all other boats must remain inactive. The same fact is true during the maneuvers of a large number of steamers or sailing vessels. During busy seasons it is very difficult for all vessels desiring to do so to enter and leave upon the same tide, and the time will soon arrive when it will be entirely impossible. Besides, the southwest channel used by large vessels is threatened with alluvions. The prolongation of the dikes of the Seine will cause, without doubt, the formation of new deposits in the estuary, and will increase the danger of the entrance to Havre.

After long discussions, a final project has been adopted. The project includes:

(1) The construction before the entrance of the present port of a new outer harbor, which is to be approached by two exterior passages from the west and southwest.

(2) The demolition of the existing north and south jetties and a portion of the front of the "Florida" quay in order to permit an easy and direct entrance into the present outer harbor, and the construction in this new part of the port of a quay with a deep-water front where ships might anchor at all times without going into the basins.

(3) The construction of a lock with a practicable lift for the largest vessels during at least half of the tide, and giving access from the outer harbor into the basins.

(4) The execution of the defensive works at the foot of the cliffs of Hève.

In the west passage, as well as in the outer harbor, there will be an anchorage of at least  $29\frac{1}{2}$  feet during six hours at each tide. A depth of 23 feet will be assured at all times at neap tides, and during eight hours at spring tides.

At the outer harbor, there will be established a quay 1,312 feet long with a depth on its water front of 20 feet. The transatlantic steamers will be able to leave this quay at an hour practically fixed.

The new lift lock will have a clear length of 738 feet, a width of  $98\frac{1}{4}$  feet, and a minimum depth of 28 feet.





## PORT OF SOUTHAMPTON.

This place enjoys a well-established reputation as a port of departure and transit for transoceanic steamers. Southampton is located at the junction of the Itchen and the Test, behind the Isle of Wight, which forms for its roadstead a natural shelter, assuring an efficacious protection to its channel, which is  $1\frac{1}{4}$  miles in width. The geographical position of Southampton, in the middle of the south coast of England, 78 miles from London, has made it the most important commercial point in the south of England. Its position opposite to the French coast has caused it to be chosen by transatlantic lines as a point of transit, in the absence of as deep an accessible harbor on the coast of the continent.

The docks, at first built in 1883 by a private corporation, have been purchased by the Southwestern Railway Company, which has enlarged them, and, in 1890, added the "Empress" dock. It has prepared and equipped them in the very best manner possible, and, by reason of these improvements, Southampton has conquered a high position.

There are three docks known as the "Close" dock, the "Open" dock, and the "Empress" dock. The "Close" dock, with a depth of 28 feet, has an area of 10 acres, bordered by about 2,600 feet of serviceable quays. The "Open" dock is separated from the preceding by a lock. Its area is 16 acres, and it has free communication with the Itchen. Its depth is 13 feet at low spring tides. The average height of the tide is 13 feet, so that at high tide there is a depth of 31 feet. At its entrance this dock is 100 feet wide, and it has 2,630 feet of quays. One of its sides is occupied by three dry docks, of which one is 500 feet long by 80 feet in width and a depth of 25 feet. A fourth dry dock, along the river, measures 450 feet length by 56 feet in width and 25 feet in depth. In the river, the quays have a length of 1,378 feet, and, at all times, a depth of 20 feet. These installations are adapted to traffic in heavy merchandise. On account of these facilities, Southampton has become a center for the distribution of all foreign and colonial products. The "Close" dock is chiefly used by the American Line. It is a parallelogram, 120 feet long of  $18\frac{1}{2}$  acres, with a depth at low tide of 26 feet. The quays on the sides are not very long. Three sides measure each  $849\frac{1}{2}$  feet, and the fourth 800 feet. The entrance to the dock is in free communication with the river, without any lock, and has a width of 172 feet.

It will suffice the reader to glance at the network of quays to understand that at Southampton, as at the best commercial port, the harbor is arranged to expedite maritime operations.

The "Empress" dock will be completed by a new quay, 751 feet in length,  $88\frac{1}{2}$  feet in width, and 20 feet in depth. This work, now in execution, will be the greatest dry dock in the world. New quays in the river are projected alongside the "Close" dock. They will have a length of 3,609 feet, and at the lowest tides will be in depth at the lowest tides. Finally, there is a project for a new quay to a depth of 30 feet under the level of low tide.

## TOTAL TRANSATLANTIC TRAFFIC.

The great navigation companies have, in ten years, more than doubled their trade. For example, the North German Lloyd Company, in 1880, transported 95,714 passengers; in 1892, 203,498. The following table gives the number of passengers carried to the United States by the leading companies in 1892:

Companies.	Carried passengers.	Steerage passengers.
North German Lloyd	20,019	117,016
Hamburg-American Packet Company	22,001	61,738
Cunard Line	16,065	26,528
American Line	14,079	19,448
Netherlands-American Steam Navigation Company	5,468	31,233
White Star Line	14,095	29,995
Transatlantic Company	9,275	20,954

In postal traffic, figures are not less significant. For 1891, the figures were:

Companies.	Letters.		Packages.	
	Tons.	Tons.	Tons.	Tons.
The North German Lloyd	130	541		
Hamburg-American Packet Company	11	91		
Cunard Line	56	243		
Netherlands-American Steam Navigation Company	2 1/2			
Transatlantic Company	18	90		

If we notice the trade toward the East, we find the number of passengers traversing the Suez Canal to have been 10,000, 18,000, 175,100, and 183,900 in 1870, 1880, 1890, and 1891, respectively.

## NAVIGATION TO AUSTRALIA AND JAPAN.

The extension of navigation to Australia is not less marked. In 1850, the maritime movement was represented by 100 ships of 354,215 tons arriving and 10,000 ships of 30,000 tons departing. In 1891, there were 3000 ships of 2,521,605 tons arriving and 3000 ships of 2,572,338 tons departing.

The same increase may be noted in trade toward Japan. In 1892, France, Germany, and England exported to Japan merchandise to the total value of \$30,000,000. The imports of Japanese goods amounted to 3,033,000 tons. The German Empire imported from Japan goods to the value of \$12,500,000.

## THE INCREASE IN THE PORT OF ROTTERDAM.

Rotterdam has been for a long time the most extensive port in this general maritime region. In the years 1880, 1890, and 1891, the number of ships which arrived in the port was 10,000, 12,000, and 13,000, respectively. As compared with the large figures

which express the activity of rivals, the number of passengers at Belgian ports appears small, viz:

Year.	Passengers arriving.	Passengers departing.	Emigrant passengers.	Total.
1888 .....	69,164	58,952	41,021	169,137
1889 .....	63,029	54,658	38,864	156,551
1890 .....	76,965	67,794	36,663	181,422
1891 .....	81,545	71,597	48,803	201,945
1892 .....	77,471	75,305	42,941	195,517
Total .....	368,174	328,306	208,292	904,582

In 1892, the total number of persons transported between Antwerp and New York included 1,493 passengers, and 41,427 emigrants.

If we look at the plan of the docks of Antwerp, it will be evident why Belgium is losing its ancient supremacy on the ocean. In the first place, the distance of this port (56 miles) from the sea necessitates too long a delay for modern vessels, which otherwise might be disposed to touch on the Belgian coast. Then, the arrangement of its basins and quays is antiquated. The facilities for loading and unloading quickly are wanting. If Antwerp would retain its position, the people and the Government must, at an early date, undertake measures for the improvement and modernization of its waterways and their appurtenances. Even then it would, because of its interior situation, be unable to attract for a short landing any of the great number of vessels en route from the North Sea to the Atlantic Ocean.

For this trade, some new port must be established upon the Belgian coast. Wherever it may be decided to be most practicable, there must be established, sooner or later, a first-class modern harbor, fitted out in the most approved fashion, and equipped with the most recent appliances. Such a project requires money for its completion, but when finished, it would once more give this country an opportunity for the development of its commerce, industries, and manufactures. Without such a harbor, Belgium can never be entirely independent upon the ocean. It is to be hoped that, when once undertaken, the jealousies of all local rivals will be laid aside, and that the entire nation will cherish and encourage, by all possible means, the establishment of some port ready to receive the vessels of all the world.

HENRY C. MORRIS,

*Consul.*

Ghent, July 16, 1894.

## AGRICULTURE IN IRELAND.

### AREA AND DIVISIONS.

Ireland has no agricultural bureau of statistics, with regular crop reports, as compiled and published by the Agricultural Department of the United States and the various State weather bureaus, but general statistics of the acreage and condition of crops, the number of live stock, etc., are collected

by the members of the Royal Irish Constabulary and Metropolitan Police periodically. From their latest reports to the registrar-general, the data for which was collected in June and July, and but recently published, I learn that the area of Ireland is 20,333,344 statute acres, divided as follows: Total acreage under crops, including meadow and clover, 4,937,179; in grass, 10,205,107 acres; in fallow, 19,639 acres; woods and plantations, 311,224 acres; turf bog, marsh, mountain, water, roads, fences, barren, etc., 4,860,195 acres, which includes 129,681 acres under water.

Ireland is divided into four provinces, viz, Leinster, Ulster, Munster, and Connaught, and these four provinces into thirty-two counties, viz: *Leinster*—Counties Carlow, Dublin, Kildare, Kilkenny, Kings, Longford, Louth, Meath, Queen's, Westmeath, Wexford, and Wicklow, containing 4,842,105 acres; *Ulster*—Counties Antrim, Armagh, Cavan, Donegal, Down, Fermanagh, Londonderry, Monaghan, and Tyrone, containing 5,322,334 acres; *Munster*—Counties Clare, Cork, Kerry, Limerick, Tipperary, and Waterford, containing 5,934,681 acres; *Connaught*—Counties Galway, Leitrim, Mayo, Roscommon, and Sligo, containing 4,234,224 acres.

## CROP ACREAGE.

In a general way, these provinces may be described as follows: Leinster is devoted to raising cattle and horses, and comprises a rich pasture region; Munster is devoted to the dairy interests; Connaught is more particularly devoted to sheep growing, and Ulster to diversified agriculture. The acreage of the several provinces is occupied with the following crops:

Crops.	Leinster.	Munster.	Connaught.	Ulster.
	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>
Wheat.....	13,391	14,801	4,536	16,614
Oats.....	301,262	232,442	137,313	583,796
Barley.....	115,224	41,780	3,915	3,685
Rye.....	1,120	2,347	5,938	2,679
Beans and pease.....	1,214		31	1,903
Potatoes.....	138,662	156,995	137,682	283,781
Turnips.....	102,246	78,450	27,882	102,716
Mangelwurzel and beets.....	16,663	24,113	5,856	5,389
Cabbage.....	10,498	18,130	8,194	7,690
Vetches and rape.....	2,131	2,496		2,401
Carrots and green crops.....	8,867	5,597	3,538	9,508
Flax.....	380	233	263	99,975
Clover and other grasses under rotation.....	198,723	120,445	32,107	289,768
Permanent pasture.....	432,132	558,154	275,710	301,971
Total.....	1,342,519	1,255,983	642,965	1,711,876
Increase over the cultivated area for 1893.....	22,238	9,240	2,521	25,138

The total increase under crops in the four provinces as compared with 1893 was 59,138 acres, of which 22,849 acres are credited to permanent pasture and 33,364 acres to flax, of which 32,885 acres were in Ulster. There was an increase in oats of 6,475 acres. It may be noted that of the cereal crops, wheat decreased 5,656 acres, Ulster alone showing an increase of acre-

age; oats increased 6,475 acres, Leinster having increased its acreage by 13,196, while Ulster decreased 7,209 acres; barley showed a decrease of 4,172 acres, Connaught alone having an increased area of 324 acres; rye decreased 1,559 acres. There has been a gradual decrease of the acreage devoted to cereals, with the exception of that devoted to oats, which has increased since 1890.

CROP YIELD.

The average yield per acre of the cereal crops has been as follows:

Crops.	1883-1892.	1892.	1893.
Wheat.....bushels.....	28.2	29.3	30.24
Oats.....do.....	48.4	51.45	54.24
Barley.....do.....	37.56	38.26	38.26
Rye.....do.....	24.6	25	26.4
Potatoes.....do.....	134.4	134.03	136.64
Mangelwurzel and Leet root.....tons.....	15.344	16.24	18.256
Turnips.....do.....	14.224	15.12	17.92
Flax fiber.....pound.....	387.8	225.4	511
Hay.....tons.....	2.352	2.352	2.24

No official returns for the yield of crops for 1894 have, as yet, been made, but the Farmers' Gazette, published at Dublin, has collected reports from one hundred and forty correspondents, distributed throughout the various counties, in which a comparison is made between the crop of 1893 and the present crop. From this report, it appears that wheat is a little more than an average crop, as very few of the correspondents estimate the crop under, and fully half estimate it above, the crop of last year. Barley appears to be equal to, if not better than, last year's crop. Oats are, in general, reported better or equal to last year's crop. The yield and quality of potatoes are much under those of last year, as very few correspondents report the crop as average, and there is much complaint of injury from frost early in the season and later from cold rains. The flax crop is more than an average crop, as the correspondents in Ulster, where the greater part of the flax is grown, report the crop an average or over. The mangelwurzel and turnip crops may be regarded as about an average in yield, but perhaps below in quality. Meadows and pastures have been exceedingly good, but the hay crop was damaged somewhat by continuous rainy weather during the harvest season. Taken all in all, the season of 1894 may be regarded as favorable to the Irish farmers, except in some of the western districts, where much reliance is placed upon the potato crop. In such districts, there will probably be some hardships experienced before another crop is grown.

The registrar-general, in his report for 1893, furnished some interesting statistics upon the potato production of Ireland. From this report, it appears that 79.1 per cent of the acreage planted to potatoes in Ireland consisted of the "Champion" variety, and that this preponderance of the "Champion" has been nearly uniform since 1881. In order that the variety may not degenerate and run out, it is customary to bring in new seed from Scotland.

## LIVE STOCK.

The following table gives the returns for live stock from 1885 as follows:

Year.	Horses and mules.	Asses.	Cattle.	Sheep.	Pigs.	Goats.	Poultry.
1885.....	576,430	197,170	4,228,851	3,478,056	1,269,092	264,437	13,890,532
1886.....	578,299	196,245	4,183,924	3,366,043	1,263,142	266,176	13,909,822
1887.....	587,234	199,512	4,157,404	3,377,826	1,408,456	271,799	14,460,643
1888.....	595,368	203,152	4,099,195	3,626,669	1,397,825	295,678	14,486,400
1889.....	604,102	206,236	4,091,174	3,789,187	1,380,670	303,933	14,856,517
1890.....	614,884	213,018	4,240,316	4,223,395	1,570,366	327,144	15,408,428
1891.....	621,479	216,268	4,448,511	4,722,613	1,367,712	336,337	15,276,128
1892.....	635,123	217,600	4,531,125	4,827,777	1,113,472	332,726	15,335,749
1893.....	643,129	218,720	4,464,057	4,421,455	1,152,417	323,173	16,097,461
1894.....	652,767	224,686	4,392,194	4,105,250	1,389,310	318,837	16,179,897

The table shows a gradual increase in the different classes, except cattle and pigs, which hold their numbers about the same. The number of horses for agricultural purposes is given at 376,375; for traffic and manufacturers' purposes, 41,260; for recreation purposes, 28,992; one year old and under, 176,716. The number of milch cows is given as 1,447,402, an increase over 1893 of 6,073. The number of ewes is given as 1,686,407, a decrease from 1893 of 135,492.

Statistics of bee production have been collected since 1885. There were produced in 1885, 302,297 pounds; 1886, 331,167 pounds; 1887, 459,386 pounds; 1888, 328,092 pounds; 1889, 424,528 pounds; 1890, 292,116 pounds; 1891, 253,561 pounds; 1892, 192,457 pounds. The number of swarms at work during the season of 1891 was 17,573, and the number of swarms brought through the winter of 1891-'92 was 18,534. The falling off of 24.1 per cent in the produce of 1892 would therefore seem to have been due to inclement conditions of the weather rather than to a decrease in the swarms kept.

## DAIRY INDUSTRY.

The dairy industry is probably the most flourishing one in Ireland. It has received great impetus within the past two years from cooperative creameries, the promoters of which have organized a creamery association. The returns for the year ending September 30, 1893, from 190 creameries, showed that 95 were owned by individual proprietors, 49 were the property of joint-stock companies, and 46 belonged to cooperative farmers. There were 167,135 cwts. of butter produced as against 141,573 cwts. in the preceding year. These factories also produced 183 cwts. of cheese and 15,154,700 pounds of condensed milk. Nearly 80 per cent of these factories were in the province of Munster. I have no data for the year ending September 30, 1894, but the growth in cooperative creameries and the increase in the creamery products have been very marked during the year just closed.

## LIVE STOCK EXPORTS.

Ireland exports live stock to Great Britain chiefly. The exports in 1893 to England and Scotland were as follows: Fat cattle, 316,344; store cattle, for fattening or breeding, 318,545; other cattle, 8,473; calves, 45,307; total of cattle, 688,669 head. Sheep, 705,299; lambs, 402,661; total of sheep, 1,107,960. Swine, fat, 405,242; store swine, 51,329; total of swine, 456,571. Horses exported in 1893, 30,390. In comparison with the enumeration of live stock in Ireland, the statistics show that 15.4 per cent of the cattle, 25.1 per cent of the sheep, 39.6 per cent of the swine, and 5 per cent of the horses were exported on foot. The fat cattle enumerated are finished almost entirely upon grass, and doubtless a large percentage of the so-called fat cattle are taken by the English and Scotch feeders and finished upon grain before being sent to the shambles. Comparing the exports of live stock for each year from 1875, the trade appears almost uniform, apparently increasing for three or four years until a maximum is reached, and then decreasing to a minimum. In the cattle trade, the lowest point reached in the years above mentioned was 556,867 in 1883, and the highest point was 782,274 in 1882. The sheep trade was at its highest in 1893 and at its lowest in 1883, when the number exported fell to 460,729, since which date there has been an almost uniformly steady increase to the present proportions.

The average prices paid for Irish produce in the principal Irish markets during 1893 were: Wheat, per bushel, 79 cents; oats, per bushel, 42 cents; barley, per bushel, 69½ cents; flax fiber, per cwt., \$14.47; potatoes, per bushel, 32 cents; hay, per ton, \$15.20; butter, per pound, 22½ cents; beef, per cwt. net,\* \$11.60; mutton, per cwt. net,\* \$12.53; pork, fresh, \$10.94; wool, per pound, 18 cents; eggs, per dozen, 19 cents.

No hard and fast laws can be deduced from these figures, but the indications are that Ireland has reached its maximum production under its present system of agriculture, and that, for the future, its production of cereals is likely to diminish. The climate and soil adapt the country admirably for live-stock growing and for dairying. Its nearness to the great English markets would seem to indicate that prosperity for Ireland lies in producing small fruits, butter, eggs, poultry, beef, and mutton, and hay for these markets.

NEWTON B. ASHBY,  
*Consul.*

DUBLIN, *November 2, 1894.*

## FLAX CULTIVATION IN IRELAND.

The following facts and statistics in relation to the growth and cultivation of flax in Ireland may be of interest in the United States:

The Irish flax crop of 1893 has proved the most favorable for the growers that they have had for many years, the proprietors of leading Scotch mills

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\* Estimated on basis 3 pounds of offal in 7 pounds of live weight.



declaring that it was almost unprecedented. Of course, in some districts, the crop could not be so favorably spoken of, but the above applies very generally. The acreage under flax has been gradually narrowing down for a number of years, but the success of the crop of 1893 seems to have had a wholesome influence, and, already, there are symptoms of a change for the better, and it is quite possible that the decline may not only be checked but an increase set in.

The largest percentage of decrease has fallen to County Fermanagh, and the next largest to County Monaghan. The total decrease for Ulster is 4.6 per cent.

*Acreage under flax in the four provinces of Ireland for 1892 and 1893.*

Provinces.	1892.	1893.	Increase or decrease.	
	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>	<i>Per cent.</i>
Ulster.....	70,322	67,047	—3,275	4.6
Leinster.....	204	247	+ 43	21
Munster.....	55	101	+ 46	83.6
Connaught.....	66	49	— 17	25.7
Total.....	70,647	67,444	—3,203	4.5

There is one drawback incident to the very small acreage. Scutch mills which go out of use are very apt to go out of repair, and consequently the owners cease to encourage the sowing of flax around them, but in the end, this may do good; the oldest and perhaps the poorest class of the mills will give up most readily, and one or two good years would give rise to a better class of mills in both structure and working.

The yield and production for the year are presented with the greatest satisfaction, and the fact is dwelt upon that one must go back thirty years to find a parallel. The idea has prevailed among many that the country was "flaxed out." In view of the large and excellent yield of last year, it is now thought that that idea must be abandoned, when it is seen that, in one season, without any special intervention, the crops of thirty years ago can be repeated.

It may be worth noting that the spring and summer season of 1893, when the yield of flax per acre was so large and so excellent, was one of the driest and warmest experienced on the Island for many years. The season was so different from former seasons that it was quite common for the people to comment upon the unusual weather, remarking "that they had never seen the like of it," etc. This was especially true of May, June, July, and August, the four months so important to the growth and ripening of crops. To what extent these unusual climatic conditions may have affected the flax crop of Ireland, I am unable to say; but, in view of the extraordinary character of the season and the unusual quantity and quality of the crop, there is, to say the least, if not a "special intervention," a remarkable coincidence.

The crops of the intervening years are worthy of notice. They vary as follows; Two years were under 280 pounds per acre, eight years were between

280 and 350 pounds, twelve years were between 350 and 420 pounds, and six years were above 420 pounds. In 1871, the most disastrous year, the yield was only 194.32 pounds per acre, and the production of fiber from 156,883 acres under cultivation, was only 13,612 tons.

The following table shows the yield per acre in the different provinces for the years 1892 and 1893, and the percentage of increase.

Provinces.	1892.	1893.	Increase.	
	<i>Pounds.</i>	<i>Pounds.</i>	<i>Pounds.</i>	<i>Per cent.</i>
Ulster.....	310.66	480.2	169.54	54.57
Munster.....	484.12	543.1	59.08	12.2
Leinster.....	569.38	788.62	219.14	38.5
Connaught.....	569.38	901.88	332.5	58.39
Total*.....	311.78	482.02	170.24	54.6

\*The figures given are not the totals for the four provinces, but represent the general average estimated upon the proportion of the produce to the acreage in each province.

The area and yield per acre being ascertained, the total production easily follows, and the exceptional yields bring out a total largely in excess of the two previous years, each of which had a larger area.

*Acreage under flax, etc., for 1892 and 1893.*

Provinces.	1892.			1893.		
	Under flax.	Yield per acre.	Total produce.	Under flax.	Yield per acre.	Total produce.
	<i>Acres.</i>	<i>Pounds.</i>	<i>Tons.</i>	<i>Acres.</i>	<i>Pounds.</i>	<i>Tons.</i>
Ulster.....	70,317	310.66	9,753	67,047	480.2	14,373
Munster.....	66	484.12	14	49	513.2	12
Leinster.....	204	569.38	52	247	788.62	87
Connaught.....	55	569.38	14	101	901.88	41

It will be seen that the increase of last year over the previous year was 4,680 tons, or 47.59 per cent. Last year, the Irish-grown flax furnished about one-fourth the supply; this year, it will amount to about two-fifths. The good yield, excellent quality, and high prices all combine as a great incentive to the farmer to raise more flax.

The imports of flax into Ireland were a little smaller in 1893 than in 1892, showing a falling off of 6.6 per cent, but the combination of the native and imported supply shows an increase of 8.3 per cent in excess of 1892. In 1892, the home supply was 9,833 tons; imported supply, 29,068 tons, and the exports 3,246 tons as against a home supply of 14,513 tons, imports of 28,543 tons, and exports of 4,422 tons, in 1893. The net supply for 1893 was 38,638 tons, being larger than the two previous years, and 2.6 per cent in excess of the average for ten years.

In 1892, there were 837,642 working spindles in Ireland, the supply of flax per spindle being 95.48 pounds; in 1893, there were 846,642 spindles, the supply being 102.2 pounds per spindle.

The price of Irish flax in 1893 was exceptionally high, viz, \$339.18 per ton, and this will no doubt influence the growing for the current year.

The average value of Irish flax is higher than that of any imported flax except Belgian, and in 1892, the most recent year for which there are figures available, Irish flax is nearly 6 per cent better than Dutch flax.

The following table gives prices of flax per ton of the different countries from the years 1884 to 1892, inclusive:

Description.	1884.	1885.	1886.	1887.	1888.
Belgian .....	\$360. 12	\$306. 58	\$248. 19	\$233. 59	\$267. 66
Dutch .....	316. 33	296. 85	296. 85	287. 12	282. 26
French .....	233. 59	194. 66	253. 05	175. 19	180. 06
German .....	155. 72	180. 06	175. 19	175. 19	150. 86
Russian .....	155. 72	175. 19	170. 33	155. 73	136. 22
General average .....	199. 52	204. 39	199. 53	175. 19	165. 46
Irish flax .....	272. 52	243. 32	223. 86	218. 99	218. 99

Description.	1889.	1890.	1891.	1892.
Belgian .....	\$330. 92	\$316. 32	\$301. 73	\$296. 85
Dutch .....	291. 99	326. 05	262. 79	248. 19
French .....	150. 86	175. 19	175. 19	194. 66
German .....	170. 33	155. 73	141. 13	136. 26
Russian .....	136. 26	126. 53	131. 39	131. 39
General average .....	175. 19	165. 46	170. 32	165. 46
Irish flax .....	238. 46	223. 86	262. 79	262. 79

The following table gives the acreage under flax and the yield per acre for the past ten years, in Ireland:

Year.	Under flax.	Yield per acre.	Total yield.
	<i>Acres.</i>	<i>Pounds.</i>	<i>Tons.</i>
1882 .....	113,484	410. 62	20,804
1883 .....	95,943	431. 06	18,464
1884 .....	89,225	363. 16	14,465
1885 .....	108,147	433. 02	20,907
1886 .....	127,865	405. 58	23,151
1887 .....	130,202	281. 4	16,357
1888 .....	113,586	394. 38	20,001
1889 .....	113,652	370. 72	18,812
1890 .....	96,896	463. 4	20,045
1891 .....	74,672	372. 96	12,433
1892 .....	70,642	311. 78	9,833
1893 .....	67,444	482. 22	11,513
Average for 10 years .....	92,233	384. 86	17,052

In the imports of vegetable substances applicable to the same uses as flax or hemp, it is authoritatively asserted that there is nothing to note, notwithstanding that every season, regularly, there are rumors of some new fiber just ready to totally eclipse flax in both utility and cost.

*Number of spindles in Irish flax mills.*

Year.	In closed factories.	In working factories.	Total.
1871.....	76,773	789,709	866,482
1872.....	57,360	836,857	894,217
1873.....	27,287	883,656	906,943
1874.....	23,779	883,164	906,943
1875.....	18,615	906,202	924,817
1876.....	35,256	869,638	904,894
1877.....	69,552	852,770	922,322
1878.....	107,712	802,950	910,662
1879.....	76,060	839,191	915,251
1880.....	43,884	839,191	883,075
1881.....	21,608	857,634	879,242
1882.....	23,692	851,458	875,150
1883.....	58,454	816,334	874,788
1884.....	50,454	816,334	866,788
1885.....	63,454	810,456	873,910
1886.....	70,754	803,026	873,780
1887.....	40,564	803,026	843,590
1888.....	27,564	803,026	830,590
1889.....	7,456	827,451	834,907
1890.....	11,766	815,685	827,451
1891.....		827,451	827,451
1892.....	9,000	837,642	846,642
1893.....		846,642	846,640

*Number of persons employed in flax mills and factories in Ireland.*

Year.	Females.		Males.			Total.
	Under 13 years.*	Over 13 years.	Under 13 years.*	13 to 18 years.	Over 18 years.	
1850.....						21,121
1856.....						28,753
1868.....	1,031	39,237	343	5,812	10,627	57,050
1871.....	1,123	36,571	472	5,560	11,307	55,039
1875.....	2,175	39,818	1,383	5,960	10,983	60,316
1879.....	2,397	36,909	1,577	4,588	10,871	56,342
1885.....	3,294	40,086	2,088	4,370	11,911	61,749
1890.....	3,406	40,647	2,450	4,791	13,181	64,475

\* Under the factories' acts, children under 14 years old can work only half time. They must show by certificate that the other half has been spent at school.

From the tables given, it will be seen that in 1893, the acreage in flax in Ireland consisted of 67,444 acres, being about 5 per cent less than in 1892, but when the produce is looked into, it will be found that the positions are reversed, for in 1892, when the flax acreage was 70,647, the produce was only 9,833 tons, whereas in 1893, the produce was 14,513 tons, or 47 per cent more than in the previous year. The average pounds per acre in 1893 were, in the province of Ulster, 480.2 pounds; in Munster, 543.2 pounds; in Leinster, 788.62 pounds; and in Connaught, 901.88 pounds. The price per pound was 15 cents. Taking the average production in the three provinces—Munster, Leinster, and Connaught—as an average of 742 pounds, each acre would have yielded, at this price, \$111.92.

A writer on the subject of flax cultivation in Ireland says:

It has frequently been deplored that Ireland was destitute of mineral wealth, but the figures show that if Ireland is deficient in this respect there are riches in the soil, and it is unfortunate that those riches should be let run to waste.

There is a strong feeling among those interested that aid should be given by the Government in order to stimulate the production of flax. There would be more or less precedent for such action, it is claimed, as many years ago model farms were started for the purpose of introducing improved methods of agriculture. The Belfast Flax Supply Association is made up of a body of very intelligent, wide-awake, and influential business men, who are lending all their energies and are ready to spend money freely to both improve and increase the supply of home-grown flax, for no one understands better than they, or appreciates the necessity more, of having an abundance of excellent raw material at the doors of their factories and mills from which to draw their supplies.

#### FLAX IN THE UNITED STATES.

Authorities agree upon the subject that flax of a medium quality can be successfully raised in many parts of the United States. The difficulty is in the handling of the straw and separation of the fiber. Occasional samples of American flax have been sent to this country. In some instances it has been mowed like wheat or oats. This causes a loss of fully 3 inches of the very best part of the fiber. The straw should be carefully pulled and tied in straight sheaves and then retted, if possible, in clear running water. It is claimed to have been demonstrated that a stagnant pool or pond detracts from the quality of the fiber.

With an ordinary crop, flax growers in this country realize \$40 to \$50 per acre for their crop, and in some instances as high as \$100 per acre has been obtained. The average last year was between \$69 and \$70. Of course, the process of preparing the fiber is very tedious and requires skilled labor. Indeed, one cause for the decrease of acreage in flax in Ireland for the past few years is the scarcity of competent laborers.

As is well known, most, if not all the flax raised in the United States is for the seed. In 1889, there were but 108 tons of fiber prepared, although there were sown 1,318,698 acres, from which there were produced 10,250,410 bushels of seed. Conditions have not changed materially since, so far as the preparation of fiber is concerned, although I believe experiments have been made on the Pacific coast within the past two years which have had in view the preparation of the fiber for spinning and weaving purposes which have been quite encouraging.

Some samples of American flax have been sent to this country, but generally they have been so roughly or carelessly handled that they could only be classed as tow. One small consignment, however, of carefully prepared American flax was shipped to Belfast two or three years since to Messrs. William Armstrong & Co. It was spun into yarn by the Belfast Flax Spin-

ning and Weaving Company, and was woven by Messrs. Armstrong into fine huck toweling. Mr. Armstrong states that the flax was of an unusually fine quality, and would compare favorably with fine Belgian flax. He sees no reason why the cultivation of flax for the fiber should not be extended in the United States, as there is no secret about the growing, scutching, or retting. It only requires careful handling, and can always find a ready market on this side of the water so long as this Kingdom continues to admit the foreign article within her borders free of duty, at a price that would pay the grower far better than any other crop he could raise.

JAMES B. TANEY,  
*Consul.*

BELFAST, *August 28, 1894.*

### FLAX CULTIVATION IN SILESIA.

While the flax trade was rather dull during the year 1892, a decided improvement took place in the course of the year 1893. There was a brisk demand for the article, even from the commencement of the season, on account of the dealers having entirely disposed of their last year's stocks, this, of course, bringing about a rise of prices. Most of the spinning mills had also worked up all their material on hand, and were obliged to enter the market at once to obtain fresh supplies. At the beginning of February prices went up from 6 to 8 marks (\$1.43 to \$1.90) per 100 kilograms (220.46 pounds), and a further rise took place in the spring from 4 to 5 marks, keeping up to the end of the season. The harvest was 20 per cent below that of the year before, and was completely sold in the market.

At the beginning of the 1894 season, trade was very brisk. A falling of prices, however, took place when it became known that the harvest of 1893 in Russia had been exceptionally good, and that large quantities were available for export.

The culture of flax has been steadily going down in this province for years past, and a further decrease is expected. The reasons are:

(1) Hand labor, which is inseparable from flax culture, has become more expensive; therefore, only small landowners, who employ their own labor, cultivate flax.

(2) Large owners have found it more profitable to grow sugar beets on their properties.

(3) The competition from Russia is very strong, that country being well adapted for flax growing, and Russian labor much cheaper.

The production of flax in the province of Silesia amounted to 80,000 to 90,000 kilograms (176,368 to 198,414 pounds) for last year, while the total consumption may be calculated at 200,000 kilograms (440,920 pounds) for the same period. The imports came principally from Russia; some of the better qualities, however, were brought from Belgium.

An apparatus to treat flax has been invented by a Professor Bauer. It is said that this will save the expense of hand labor. The machine is now being tried by the growers, but it has not yet progressed beyond the experimental stage.

The following were the average prices per 100 lb. of flax in this district during the periods given:

Location.	1892.	1893.	1894.
Water side.			
Superior.....	\$21.10 to \$24.10	\$21.10 to \$24.10	\$25.10 to \$27.85
Lower.....	19.10 to 21.10	19.10 to 21.10	20.40 to 23.35
Between			
Superior.....	21.10 to 24.10	21.10 to 24.10	22.50 to 25.40
Lower.....	19.10 to 21.10	19.10 to 21.10	20.40 to 23.35
Higher			
Superior.....	21.10 to 24.10	21.10 to 24.10	22.50 to 25.40
Middle and inferior.....	19.10 to 21.10	19.10 to 21.10	20.40 to 23.35

FREDERICK OPP,

Consul.

BRESLAU, August 13, 1894.

## AMERICAN PRODUCTS AND MANUFACTURES IN SWITZERLAND.

Switzerland is but a small country, its entire superficies being 15,992 square miles (10,234,880 acres). The country is rich, but most of its wealth is derived from industrial pursuits. Three factors tend to make industries profitable. These are (1) the admission of all raw materials free of duties, (2) the great water courses utilized wherever possible for motive power, and (3) cheap labor.

The population of Switzerland is about 3,500,000.

While every foot of ground adapted for agricultural purposes is cultivated, Switzerland can not produce more than one-third of the food consumed. The total area of Switzerland is subdivided as follows: Forests, 1,906,129 acres; vineyards, 75,366 acres; arable lands, including orchards, and meadows, 5,341,808 acres. It therefore follows that the area of producing land is 71 per cent of the whole, *i. e.*, 7,523,303 acres. The remaining 29 per cent we find to be apportioned as follows: Gardens, 454,417 acres; lakes, 342,481 acres; cities, villages, etc., 40,277 acres. Other nonproducing or worthless land, 2,074,400 acres.

### AGRICULTURE AND DAIRYING.

Most of the agricultural lands are devoted to the raising of grass and forage crops, to support numerous herds of cattle, which give the best of the Swiss milk. The form of dairy products, which have a





To attain this, we must establish direct communication and bring American products into immediate proximity. Our country is growing, new factories are being established every year, thousands of acres of new land are being broken and cultivated annually, our different products are increasing fast, and unless we find foreign outlets for our surplus we will have to dump what we can not consume ourselves. Our land will depreciate in value, our revenues retrograde, and taxes increase. We must, therefore, make efforts in the right direction in order to remain prosperous. Goods, as may be imagined by our people, are not given away here; in fact, provisions and staple groceries are higher than with us. To illustrate the cost of living, I give below the retail prices of a few staple products as they are sold in the city of Zurich:

Articles.	Price.	Articles.	Price.
Dried apples:		Maize cinquantin....per pound..	\$0.02½
Sour.....per pound..	\$ .20½	Flour, white.....do...	.03½
Sweet.....do...	.08½	Italian paste.....do...	.06½
Butter:		Dried prunes.....do...	.06½
Fresh.....do...	.32½	Eggs.....per 100..	1.25
Artificial.....do...	.23½	Dried pears.....per pound..	.36½
Crackers.....do...	\$0.14 <sup>100</sup> / <sub>100</sub> to .21½	Poultry.....each..	\$0.50 to 1.25
Chocolate.....do...	.22 <sup>100</sup> / <sub>100</sub> to .52½	Ducks.....do...	.70 to 1.05
Pepper, ground.....do...	.39½	Lard.....per pound..	1.10 <sup>100</sup> / <sub>100</sub>
Cinnamon.....do...	.42½	Bacon.....do...	.25½
Oatmeal.....do...	.07½	Ham.....do...	.29½
White beans.....do...	.03½	Cooked.....do...	.46½
Split pease.....do...	.04½	Beef, fresh.....do...	.19½
Honey (genuine) extracted...do...	.31½	Veal, fresh.....do...	.23½
Coffee.....do...	.26½ to .42½	Mutton, fresh...do...	.21½
Potatoes.....do...	.01½	Pork, fresh.....do...	.19½
Cheese, Emmenthal.....do...	.17½		

Many articles of American production could, I think, be introduced advantageously into Switzerland; some are on sale, but the prices are so high that rich people only can purchase them. In one of the grocery shops here, I found a box of fancy California sun-dried apricots. Upon examination, I discovered their origin, being branded "25 pounds California apricots," put up by a California firm. Being a Californian, and identified with the California dried fruit interest for twenty years past, I purchased a pound and was charged 2.40 francs (48 cents) for the same.

Now, I claim this is a figure at which no one but a wealthy man can indulge in this "luxury," whereas, if sold at say, 20 cents per pound, the masses could be induced to eat dried apricots, and a market for our surplus in that article would be established.

Can this be done, and will apricots pay our people if retailed at this figure, leaving dealers here a sufficient margin to induce them to push these goods?

I say emphatically yes, as demonstrated below. If our fruit growers realize \$1 per 100 pounds for their green fruit in an average of ten years, it will not only pay but give them an annual net return of \$200 per acre.

Now, green apricots at \$1 per 100 pounds will cost, including labor, boxing, or sacking, wear and tear on drying material, free on board cars, as follows:

Green apricots, etc.....	\$8.00
American middlemen's margin, say.....	2.00
Freight from California common point to seaboard.....	1.20
Ocean freight to Antwerp.....	.25
Railroad freight from Antwerp to Switzerland.....	1.00
Customs duty (2.50 francs per 220 pounds).....	.22
Total cost delivered (very liberal estimate).....	12.67
Swiss dealer's margin of, say, 25 per cent.....	4.16
Grand total.....	16.83

This would make dried apricots cost consumers  $16\frac{3}{4}$  cents per pound, or about 84 centimes Swiss money. Giving the Swiss dealers a still wider margin and allowing them to retail the fruit at 20 cents per pound, the article would undoubtedly become popular and go into general consumption. A little advertising, showing how wholesome dried fruits are, especially to the working population, whose principal diet consists of bread, cheese, wine, and coffee, could not fail to bring good results.

The same will apply to all our dried fruits, which, however, owing to high figures, are but little known. Apples, pears, apricots, nectarines, peaches, plums, California French prunes, Sultana seedless raisins, dried grapes, raisins, etc., can easily be introduced.

*Honey.*—This article can be bought free on board in California, on an average, at from 5 to 6 cents per pound for extracted, and 8 to 10 cents per pound for comb in one pound frames. This product is usually a drug in southern California and can hardly be moved. Extracted honey retails in Switzerland at 30 cents per pound, and comb at 50 cents. Most of the extracted honey sold here is granulated and must be melted if wanted in liquid state. While honey is on the breakfast table of every hotel and restaurant, and those whose means permit them to purchase the article, the poor people, or even the middle classes, use it but sparingly, prices being too high, but if sold retail at say, 15 cents for extracted and 25 cents for comb, great quantities would be consumed and replace butter to some extent. The freight on honey from the United States by rail to the seaboard, steamer to European ports, thence by rail to Switzerland, inclusive of customs duties, will not exceed 3 cents per pound. Give our American apiarist a living price of 7 cents a pound for extracted honey, and it would cost dealers here 10 cents. If sold at 15 cents per pound to consumers, it will leave a margin of 50 per cent to be divided among dealers. Honey can be placed here much cheaper if shipped by sailing vessel via Cape Horn; the freight rate and customs duties will then not exceed 2 cents per pound.

I may add that these arguments will apply not only to Switzerland, but the same results can be obtained all over Europe. The following articles are imported into Switzerland, all of which, to some extent, could be sup-

plied by us, everything being equal: Horses, mules, beef cattle, hogs, sheep, live and dressed poultry, resin, borax, lumber and hard woods, asbestos, hay, straw, leather, agricultural implements, lead, copper, silver, lard, dried and canned fish, corned beef, canned meats of all descriptions; canned fruits, jams, jellies, and vegetables; green and dried fruits, oranges and lemons, honey (comb and extracted), potatoes, fresh and dried vegetables, wheat, rye, oats, barley, corn, dried beans and pease, flour, grits, malt, leaf tobacco, wine in barrels and bottled, brandies, raw silks, cotton, wool, ramie, hides, skins, beeswax; clover, grass, mustard and assorted garden seeds; pampas plumes, marble, sugar, molasses and sirups, coffee, buggies and carriages; hardware, tools, and machinery of all descriptions; drugs, patent medicines, quicksilver, cement, petroleum, etc.

It is true we supply some of these already, but not in a direct way. They are imported by German, Belgian, Dutch, and English houses, who carry these goods in bonded warehouses in seaport towns, and, when sold, they are shipped through in bond, thus paying but one customs duty, and are entered as American importations. But before this is accomplished, these goods have passed through many channels, each of which has to have a profit. The prices of such articles are, by the time they reach the consumer, entirely too expensive, and sales naturally are limited.

Proper efforts in the right direction should bring us into direct contact with the Swiss dealers, and then we may anticipate good results. Herewith are given the answers to questions received in conversation with some of the largest dealers and importers:

*Tobacco.*—Tobacco of American production is handled more or less by all the cigar and smoking tobacco factories of Switzerland. The Maryland, Kentucky, and Virginia article is well known; therefore, there is but little show for increased sales, as what is needed comes necessarily from the United States. I found but one firm—Vautier Frères, at Grandson—the most important house in that line having direct communication with the United States. All the other firms buy of Bremen, Hamburg, Antwerp, or Amsterdam houses, thus paying a royalty, which we should eradicate.

*Agricultural implements.*—There is but little call for these, owing to small holdings and the necessity of giving every member of the large Swiss families employment. The sale of garden tools, grass mowers, fruit peelers, etc., could be increased.

*Hardware.*—Hardware of American manufacture can be found everywhere, but prices are held pretty stiff; hence sales are limited.

*House-furnishing goods.*—These are very high and of old styles. I think, by proper efforts, our large furniture factories which turn out such excellent modern goods, could find a good market in this country.

*Canned fruits and vegetables.*—If these were sold direct instead of coming here through foreign importers, sales could be increased.

*Wines and brandies.*—These can be sold, and at prices now ruling in California I am convinced we could compete with other nations. The

Swiss people drink more wine, population considered, than any other European nation. The tariff war with France killed the wine trade of the latter country, which formerly supplied this Republic with most of the wines consumed, and Italy, Germany, Spain, and Hungary at present supply their wants. The importation into Switzerland of wines was, in 1892: In barrels, 30,435,475 gallons; in bottles, 439 tons, of which only 1,611 gallons were received from the United States. This is an opportune time for our California wine men to strike for this trade. Our wines are not well known here. A few shipments have been made, it is true, but the product was not put into the hands of the right parties. If we want our goods put prominently before the public and establish a permanent trade, we must do as other nations have done for years—that is, merchants or growers must send their sons, nephews, or cousins to the market intended to be canvassed, establish them, give them a good stock of goods, let them go before the respective mercantile communities in which they are established, and work up a trade by incessant work, which is not obtainable in any other manner.

Consignment of goods sent out to disinterested parties will not bring the desired results. See what English, German, Italian, French, and Swiss houses have accomplished by establishing branches in the United States, Mexico, Central and South America, East and West Indies, China, Japan, Australia, etc. We have plenty of young men who, if opportunity is offered them, will develop business tact and ability, and who, otherwise, will remain dormant at home. Give our growing young generation an opportunity, and they will no doubt be a credit to their country. This, of course, applies not only to the wine industry but to our entire American production.

*Hops.*—The manager of the United Swiss Breweries, at Winterthur, St. Gall, and Geneva says: We never have seen a sample of American hops, but if an opportunity were offered us we would give them a fair trial and inform you of results. If the article answers our purposes we, as well as all brewers in this country, would become heavy buyers.

*Cotton-seed oil.*—From Emil Keller & Co., Zurich:

What vegetable oils we have seen of North American production, we find carry a rather pronounced fruit taste, and therefore, are not sought. Indian cotton-seed oils find a ready market and are sold in large quantities in Switzerland, being used in the manufacture of artificial export butter and soaps, and are also mixed with olive oil, lard, and suet for culinary purposes. Indian cotton-seed oil costs us on the wharf at Antwerp 48 to 50 francs (\$9.26 to \$9.65) per 100 kilograms of 220 American pounds. If your people would send us samples and give us a chance to test it thoroughly we might become heavy purchasers.

*Metals.*—From Baer & Co., wholesale metal dealers at Zurich (dealing also in hardware, tools, and agricultural implements):

All metals, tools, machines, and implements of American origin that we have imported so far, we have obtained from England. We think this branch of trade could be materially increased if your people would try and reach us direct, and thus give us the benefit of such extra margins as we are taxed with by English importers. We have no doubt American manufacturers can compete with the English manufacturers, as otherwise such goods of Ameri-

can make as we handle through English importers could never have gained a foothold in England and other European markets.

*Wool.*—From the Verein Schweizerischer Woll-Industrieller :

We have never handled North American wool, nor used the same in our factories. We are, however, heavy importers of South American and Australian wools, and if your people will send us samples, and the article will answer our purpose we will certainly, if prices are right, purchase and induce others to do the same.

*Cotton.*—A great deal of this American product reaches Switzerland, but only a part of it comes direct ; great quantities also are supplied by English importers. Immense quantities of cotton goods are manufactured here. It would be well to establish direct relations, as the great competing countries of East Indies and Africa have done.

#### FOREIGN TRADE OF SWITZERLAND.

The following table will show the total quantity of goods entered at the custom houses of Switzerland, and what part of such imports were of American origin :

Articles.	1889.		1890.		1891.		1892.	
	Total import.	Share of United States.	Total import.	Share of United States.	Total import.	Share of United States.	Total import.	Share of United States.
	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>
Wheat .....	293,025	12	334,895	142	342,772	649	308,045	42,556
Rye .....	5,430	49	4,536	10	3,199		2,551	
Oats .....	51,439	33	48,358	1,432	55,455	1,152	56,029	116
Barley .....	13,473	5	14,367		13,550	10	13,834	20
Maize .....	32,139	369	34,928	9,736	33,972	1,648	38,893	6,532
Beans .....	1,661		1,341		2,555		1,632	12
Pease .....	350		379	3	411		414	25
Flour .....	22,805		21,023	59	23,041	76	23,902	528
Grits, etc. ....	7,575		8,920		11,161		12,625	945
Malt .....	20,231		23,298		26,058		25,613	
Hops .....	467		373		424		427	
Potatoes .....	39,744		38,539		37,571		31,823	
Other fresh vegetables .....								
Vegetables: .....	15,475		17,128		16,334		12,556	
Dried .....	109		118		98		67	
Canned .....	385	1	418	4	616	1	362	1
Fruits: .....								
Green .....	4,115		3,787		5,133		4,522	
Dried .....	3,112	21	1,156		2,471	11	1,700	66
Oranges and lemons .....	1,919		1,515		1,255		1,529	
Jams .....	41	1	50	1	45	1	54	1
Jellies .....	48	1	54	2	46	1	49	1
Honey .....	203	1	316		273		286	31
Wax .....	99		103		91	1	116	1
Molasses .....	959	107	1,004	47	694	53	1,615	208
Raisins .....	1,524		1,412		1,758		2,119	
Tobacco leaves .....	5,070	242	8,708	486	4,014	483	4,611	2,901
Cotton .....	28,559	11,886	27,274	10,719	24,862	14,762	24,196	12,471
Wool, raw .....	3,955	278	3,958	368	3,558	225	4,196	
Straw, etc. ....	14,056		13,826		14,855		15,285	

*Foreign trade of Switzerland—Continued.*

Articles.	1889.		1890.		1891.		1892.	
	Total import.	Share of United States.	Total import.	Share of United States.	Total import.	Share of United States.	Total import.	Share of United States.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
Hay .....	15,438		12,947		13,274		11,542	
Leather:								
Sole .....	880	117	920	289	1,054	315	1,045	420
Other .....	1,359	82	1,545	100	1,436	95	1,314	230
Lead .....	1,984		2,036		1,867		2,036	26
Copper .....	786		529	5	585	10	664	7
Silver .....	50		53		5		47	
Quicksilver .....	4		3		54		12	
Marble .....	1,663	3	1,956		1,918		3,103	
Hides .....	551		558		681		813	33
Skins .....	388		446		569	3	440	
Flower bulbs .....	23		28		27		28	
Borax .....	101		79	1	153			
Resin .....	1,230	26	1,457	45	1,511	68	1,773	339
Agricultural imple-								
ments .....	32		42		61	1	67	1
Corned beef, etc. ....	833	270	1,506	871	1,701	852	1,191	831
Dried and canned								
fish .....	618	4	611	4	724	2	664	4
Lard .....	3,438	1,123	3,511	1,871	2,984	2,005	2,435	2,394
Wines in bottles .....	768		827		942	3	439	
	<i>Hectol.*</i>	<i>Hectol.*</i>	<i>Hectol.*</i>	<i>Hectol.*</i>	<i>Hectol.*</i>	<i>Hectol.*</i>	<i>Hectol.*</i>	<i>Hectol.*</i>
Wines in barrels .....	898,089	178	944,770	40	1,107,968	114	1,152,117	61
Brandies in barrels ..	53,705	19	72,767	14	74,057	7	80,962	29

\* 1 hectoliter = 26.417 gallons.

The above table shows a marked increase in American imports for the year 1892, and would be misleading without explanation. Prior to 1892, goods of American manufacture and production bought and imported by Swiss houses from England, France, Germany, etc., were credited as imports from these countries, whereas, beginning with 1892 and since, goods must show the country of origin, and hence are now properly tabulated as American goods.

## CUSTOMS DUTIES.

The following are the duties assessed per 100 kilograms (220.46 pounds) on goods entering Switzerland:

Articles.	Rate.	
	Francs.	
Wheat, rye, oats, barley, maize, beans, pease, etc. ....	0.30	80.058
Flour (grits) .....	2.00	.383
Honey .....	15.00	2.894
Cotton, wool, marble, lead .....	.30	.0586
Copper .....	1.00	.1918
Silver .....	Free.	Free.
Hay, straw, green fruits, potatoes, fresh vegetables .....	Free.	Free.
Lard, dried vegetables .....	5.00	.964
Hides and skins .....	.60	.1188

## Customs duties—Continued.

Articles.	Rate.	
	Francs.	
Hops.....	4.00	.77½
Malt, dried fish.....	1.00	.19½
Tobacco, canned vegetables.....	25.00	4.82½
Agricultural implements, provisions.....	6.00	1.16
Wax.....	1.50	.28½
Flower bulbs.....	50.00	9.65
Jams.....	40.00	7.72
Jellies.....	20.00	3.86
Oranges, lemons.....	2.00	.38½
Quicksilver, molasses, table raisins.....	3.00	.57½
Grapes for the manufacture of artificial wine.....	20.00	3.86
Dried fruits.....	2.50	.48½
Leather:		
Sole.....	16.00	3.09
Other.....	8.00	1.54
Resin.....	.20	.93½
Borax.....	1.00	.19½
Brandies.....	*	.03½
Wines (natural) in barrels.....	3.50	.67½

\*20 centimes (3.96 cents) for each degree of alcohol.

## FREIGHT RATES.

The lowest obtainable steamship rates for shipments to Switzerland, I am told, are by way of Antwerp, and from the latter point the railroad rates are cheaper than from any other European seaport, it being Switzerland's nearest seaboard. The rates to the depot at Zurich on such merchandise as the United States could supply are, per 100 kilograms or 220 pounds:

Articles.	2,204 pounds to 10,803 pounds.		11,023 pounds to 21,826 pounds.		22,046 pounds.	
	From Havre.	From Antwerp.	From Havre.	From Antwerp.	From Havre.	From Antwerp.
Honey.....	\$1.59	\$1.21	\$1.27	\$1.07	\$1.17	\$0.96½
Cereals of all kinds.....	1.10	1.16	.78		.67½	.62
Flour.....	1.10	1.16	.78		.67½	.62
Wax.....	1.59	1.16	1.27	1.07	1.17	.96½
Jams and jellies.....	1.59	1.21	1.27	1.09	1.17	.96½
Dried fish and others.....	1.65	1.21	1.14	1.09	.92	.96½
Leather.....	1.59	1.21	1.14	1.09	.90	.96½
Hides and skins.....	1.59	1.16	1.27	1.09	.90	.96½
Metals, machinery and parts thereof.....	1.29	1.16	.91	.91	.83	.85
Wines.....	1.32	1.16	1.01	1.12	.95	1.04
Vegetable oils.....	1.59	1.25	1.27	1.12	1.17	1.04
Hops, pressed.....	1.59	1.32	.94½	.83	.75	.62
Provisions.....	1.59	1.25	1.27	1.12	1.17	1.04
Agricultural implements, tools, etc.....	1.29	1.21	1.07	.91	.87	.85
Wool in bales, pressed.....	1.59	1.29	.91	.91	.87	.84
Cotton in bales, pressed.....	1.59		.91	.91	.87	.71
Tobacco.....	1.47	1.21	1.12	1.12	1.01	1.04
Hay.....			.55	.62	.49	.45

This will give our people an opportunity to do some figuring. What the inland American rates to American ports are, any one can ascertain by applying for information at their respective local railroad offices.

## PRICES OF PRINCIPAL IMPORTS.

The following table shows a series of articles imported into Switzerland in the year 1892, their principal sources of supply, and their average value per 100 kilograms (220 pounds), as per Swiss customs statistics :

Articles.	Principal sources of supply.	Average value per 100 kilograms net (220.46 pounds).	
		<i>Francs.</i>	
Resin .....	Germany, France, Italy, and United States (a good part).	29.38	\$3.74
Grass and forage seed.....	Germany, Austria, France, Italy, England, and United States (very little).	102.22	19.73
Hay.....	Germany, Austria, France, and Italy.....	7.50	1.45
Flower bulbs.....	Germany and Netherlands.....	473.00	91.29
Leather :			
Sole.....	Germany, France, Belgium, England, and United States (about half).	257.00	50.00
Other .....	Germany, France, England, and United States (a good part).	426.00	82.22
Agricultural implements.....	Germany, France, England, and United States (very little).	102.00	19.68
Lead.....	Germany, Italy, England, Spain, and United States (a little).	29.00	5.60
Copper.....	Germany, France, England, and United States (a little).	135.00	26.05
Lard.....	About all from United States.....	92.75	17.90
Jams.....	France and Italy.....	212.00	40.91
Dried and canned fish.....	Germany, France, Italy, Scandinavia, and United States (a little).	57.00	11.00
Provisions.....	Germany, Austria, England, Danube coun- tries, and United States (most all).	137.00	25.44
Poultry, dead.....	France, Italy, and United States (very little).	257.00	49.60
Raisins.....	France, Italy, and Spain.....	42.00	8.10
Dried fruits.....	Germany, Austria, France, Italy, Danube countries, and United States.	58.00	11.19
Jellies.....	Germany and France.....	120.00	23.16
Dried grapes for the manufacture of arti- ficial wine.	Spain, Greece, and Asia Turkey.....	40.00	7.72
Oranges and lemons.....	France, Italy, and Spain.....	35.00	6.76
Potatoes.....	Germany, Austria, and France.....	4.70	.91
Vegetables :			
Fresh.....	Germany, France, Italy, Austria, and Egypt.	18.00	3.47
Dried .....	France and Italy.....		
Wheat.....	Austria, France, Russia, Danube coun- tries, Turkey, and United States (a good deal).	23.50	4.54
Rye.....	Austria, France, Italy, Russia, and Dan- ube countries.	17.00	3.28
Oats.....	Austria, France, Italy, Russia, and United States (a little).	18.00	3.47
Barley.....	Germany, Austria, France, and United States (a little).	23.00	4.44
Maize.....	Austria, Italy, Russia, Danube countries, Turkey, La Plata, and United States (a great part).	17.50	3.38
Beans.....	Austria, Russia, and United States (a lit- tle).	23.50	4.54
Pease.....	Germany, Austria, France, Netherlands, Russia, and United States.	27.50	5.31



*Prices of principal imports—Continued.*

Articles.	Principal sources of supply.	Average value per 100 kilograms net (220.46 pounds).	
		<i>Francs.</i>	
Flour.....	Germany, Austria, France, Italy, Russia, and United States.	35.50	\$6.85
Honey.....	Germany, France, Italy, South America, and United States (about one-tenth).	102.00	19.52
Hops.....	Germany and Austria.....	250.00	49.25
Malt.....	Austria.....	31.50	6.08
Tobacco leaves.....	Netherlands, Central America, Brazil, and United States (three-fourths).	137.00	26.44
Molasses.....	Germany, France, England, and United States (a good deal).	35.00	6.76
Wines (natural) in barrels.....	Germany, Austria, France, Italy, Spain, Greece, Danube countries, and Algeria.	*28.04	*5.41
Cotton.....	Egypt, Indies, and United States.....	120.70	23.30
Wool.....	Germany, France, Italy, La Plata, and Australia.	188.00	36.28
Straw, etc.....	France, Italy, Algiers, Central America, and United States (a little).		
Horses.....	Germany and France.....	661.00	127.57
Hogs.....	France and Italy.....	94.83	18.30
Hides.....	Germany, France, and United States (some).	88.00	16.98
Skins.....	Germany and Austria.....	307.00	59.25
Wax.....	.....do.....	239.00	46.13

\* Per hectoliter of 26.417 gallons.

## FINANCIAL STATUS OF SWITZERLAND.

Now, as to the financial status of Switzerland, I will say that it is of the best. Bankers are in communication with all the important commercial centers of the world. Money is plentiful and cheap. For commercial purposes, loans can be effected at from 3 to 3½ per cent per annum on three or six months paper.

As an illustration of the abundance of ready money, the following will demonstrate it: The Federal Government issued a call for a loan of 20,000,000 francs. Subscription lists were opened all over Switzerland, and in less than two days 350,000,000 francs were subscribed. Another instance: The city of Zurich, wishing to reduce the interest on its 4 per cent bonded indebtedness, called for a loan of 15,000,000 francs, bearing interest at the rate of 3½ per cent per annum, to take up the older bonds. Subscription being opened, 85,000,000 francs were subscribed within two days.

Business all over the country is in a pretty healthy condition, and failures are few. Terms of credit are very liberal, varying from three to six months, with a discount for cash at the rate of 6 per cent per annum.

## SWISS EXPOSITION IN 1895.

A federal exposition will be opened at Geneva, beginning May 1, 1895, at which our people will have a chance to exhibit our products and give to the Swiss population an opportunity to pass judgment on the same.

EUGENE GERMAIN,

ZURICH, June 2, 1894.

*Consul.*

## AGRICULTURAL PRODUCTS IN SWITZERLAND.

The principal crops of Switzerland, except grapes and other late fruit, having been gathered, a fair estimate of the yield for 1894 can now be made. The year, though not meeting in all respects the expectation of rich crops to which the favorable spring season had given rise, may yet, after all, be called a quite satisfactory one.

*Forage crop.*—Last year's failure of the forage crop was followed by an unusually abundant one this year; and even after gathering the second, and in some cases the third crop of hay, there is pasturage sufficiently rich to keep the cattle in good condition until cold weather, necessitating stable feeding, shall set in. Speculators who, in anticipation of another dry season and short crop, had bought up and stored large quantities of hay with the object of "bulling" the market, have met with well-deserved disappointment and loss.

*Fruits and wine.*—The orchards and vineyards, which looked so promising in the spring and early summer, will not yield as much, nor will the quality of the product, especially the wine, be as good as last year. Indeed, it can scarcely be expected that last year's superabundance in quantity and excellence in quality will soon be matched. The cool, rainy spells of weather, which have characterized the present season, were not favorable to the full development of the fruit, and in some sections the grapes have been injured by peronospora and oidium, which, in spite of sprinkling with copperas and other fungi killing preparations, contributed to reduce the quantity as well as the quality of the product. Yet the yield will probably not fall much below the average, which last year's crop had largely exceeded.

Whether wine growing will continue to be a remunerative business in this country will depend much on how successful the wine growers may be in their struggle against the phylloxera, which seems to spread, in spite of all the efforts which the municipalities in the wine growing districts make to eradicate it.

*Potatoes.*—Potatoes, which form an important part of the daily diet in this country, show a large yield, but in some parts of the country rot has made its appearance to an alarming degree. To what extent this will injure the crop can not, however, be estimated at present.

*Cereals.*—Of cereals, wheat is the most important. Repeated spells of cold, rainy weather, with occasional storms, have combined to injure the crop to some extent, still it turned out to be a fair middling one after all.

It is well known that Switzerland, even in favorable seasons, does not produce over one-third of the quantity of wheat it consumes; the deficiency has to be made up by importation from Russia, Austria-Hungary, the United States, the Danubian principalities, etc.

From the "Statistical Report for 1893," lately published, the following table, showing the importation of grain and flour into Switzerland in the four quarters of the year mentioned, has been compiled :

*Importation of grain and flour in 1893.\**

Quarter ending—	Wheat.	Oats.	Barley.	Maize.	Total.
	<i>Bushels.</i>	<i>Bushels.</i>	<i>Bushels.</i>	<i>Bushels.</i>	<i>Bushels.</i>
March .....	2,381,466	829,750	232,196	298,324	3,741,736
June .....	3,329,321	1,151,316	133,200	544,350	5,158,187
September .....	2,894,099	690,333	80,075	725,826	4,390,333
December .....	3,656,705	1,145,077	348,441	489,296	5,639,519
Total .....	12,261,591	3,816,476	793,912	2,057,796	18,929,775
Approximate values .....	\$12,573,978	\$2,288,014	\$672,186	\$1,581,589	\$17,095,767

Quarter ending—	Flour.	Malt.	Meal, groats, and farina.
	<i>Barrels.</i>	<i>Bushels.</i>	<i>Tons.</i>
March .....	55,187	514,647	3,048
June .....	65,528	530,127	3,130
September .....	69,542	348,918	2,959
December .....	123,677	259,257	3,277
Total .....	313,934	1,652,949	12,414
Approximate values .....	\$1,338,101	\$1,789,231	\$587,055

\* Reduced to American weights and measures.

In the importations the several countries named below participated as follows :

Countries.	Quantity.	
	<i>Quintals.*</i>	<i>Bushels.</i>
<i>Wheat.</i>		
Russia .....	2,338,608	8,582,691
Austria-Hungary .....	514,148	1,886,923
United States .....	338,948	1,243,937
Danubian principalities .....	102,800	377,276
Other countries .....	46,529	170,761
Total .....	3,341,033	12,261,588
<i>Oats.</i>		
Austria-Hungary .....	358,538	2,193,057
Russia .....	212,841	1,295,761
Other countries .....	53,568	327,658
Total .....	623,947	3,816,476
<i>Maize.</i>		
Danubian principalities .....	235,871	927,479
Austria-Hungary .....	118,594	466,328
Russia .....	81,187	319,239
Italy .....	53,607	210,791
United States .....	12,745	50,115
Other countries .....	21,323	83,845
Total .....	523,327	2,057,797

\* 1 quintal (220.46 pounds) = 3.67 bushels of 60 pounds. Reductions are made as follows, per bushel: Wheat, 60 pounds; oats, 36 pounds; maize, 56 pounds.

Of barley, only 505 quintals (2,412 bushels); of flour, 1,084 quintals (1,218 barrels); of meal, groats, farina, etc., 4,073 quintals (918,984 pounds) came from the United States, while malt does not figure at all among the American importations. Of barley and malt, Austria furnished by far the largest quantity, while the flour, meal, groats, and farina came principally from Italy, France, Russia, Germany, and Austria.

In the annual report of the Commercial Association of Zurich, which lies before me, the year 1893 is referred to as a "very bad one" for the trade, as the prices, especially of wheat, which had already been on the decline, kept constantly dropping, until at the end of the year they had reached a lower point than any one could possibly have foreseen. A certain animated feeling which was noticeable at the beginning of the year, and led to increased sales, did not last, owing to the enormous stocks on hand. Equally disappointing was another short revival of business, caused by the excessive drought in April and May, which threatened to greatly diminish the crops. Copious rains, coming in good season, changed the situation, and in place of a poor crop, as had been expected, there was a surprisingly large and abundant one. America, still controlling the market, inundated Europe with its inexhaustible stores, thereby preventing any improvement of trade.

The year, which had started with an average price of 21½ francs (\$4.15) per quintal (\$1.13 per bushel), closed with an average of 19¼ francs (\$3.72) per quintal (\$1.01 per bushel), delivered at Swiss railway stations.

It may be of interest to note the average monthly price of wheat per bushel of middling quality in the ten years since 1884, as given in the following table in American currency:

Month.	Hungarian.										Rus- sian, 1893.	Kan- sas II, 1893.
	1884.	1885.	1886.	1887.	1888.	1889.	1890.	1891.	1892.	1893.		
January.....	\$1.42	\$1.21	\$1.12	\$1.31	\$1.08	\$1.14	\$1.29	\$1.30	\$1.55	\$1.19	\$1.13	\$1.09
February.....	1.39	1.20	1.19	1.34	1.08	1.13	1.26	1.31	1.51	1.19	1.13	1.09
March.....	1.39	1.20	1.21	1.34	1.06	1.13	1.29	1.37	1.50	1.16	1.13	1.05
April.....	1.37	1.26	1.24	1.32	1.06	1.13	1.29	1.42	1.43	1.16	1.10	1.04
May.....	1.34	1.31	1.21	1.31	1.05	1.13	1.29	1.50	1.41	1.24	1.16	1.08
June.....	1.34	1.26	1.19	1.29	1.05	1.14	1.28	1.50	1.37	1.24	1.13	1.05
July.....	1.31	1.21	1.19	1.21	1.05	1.22	1.24	1.44	1.29	1.19	1.08	1.04
August.....	1.26	1.13	1.25	1.13	1.12	1.26	1.21	1.54	1.26	1.16	1.04	1.02
September.....	1.21	1.13	1.29	1.05	1.13	1.25	1.21	1.60	1.21	1.14	1.02	1.00
October.....	1.19	1.19	1.29	1.05	1.16	1.26	1.24	1.55	1.21	1.13	1.02	1.00
November.....	1.16	1.16	1.29	1.03	1.19	1.26	1.25	1.58	1.19	1.13	1.01	.97
December.....	1.13	1.13	1.30	1.05	1.16	1.28	1.24	1.57	1.19	1.10	1.01	.97

From the report above mentioned, I also extract the following table, giving the fluctuations in prices of grain and flour in 1893, as compiled from the quotations at the Grain Exchange of Zurich.

*Prices of grain and flour in 1893.*

Month.	Wheat (per bushel).				Maize, per bushel.	Flour (middling) per barrel.
	Hunga- rian.	Rouma- nian.	Russian.	Ameri- can.		
January.....	\$1.18	\$1.10	\$1.05	\$1.05	\$0.82	\$6.00
February.....	1.16	1.05	1.13	1.05	.81	6.00
March.....	1.13	1.03	1.10	1.03	.79	5.92
April.....	1.12	1.04	1.09	1.03	.76	5.84
May.....	1.18	1.09	1.13	1.05	.79	6.00
June.....	1.21	1.09	1.13	1.04	.82	6.00
July.....	1.16	1.03	1.05	1.03	.81	6.00
August.....	1.14	1.00	1.04	1.00	.79	6.00
September.....	1.10	1.00	1.03	.97	.79	6.00
October.....	1.13	1.00	1.03	.97	.79	6.00
November.....	1.10	.97	1.00	.97	.79	6.00
December.....	1.09	.97	1.00	.97	.77	6.00

*Maize.*—The protracted drought of the spring of 1893 had the effect of keeping the prices of Indian corn, which is almost exclusively used for stock feeding, and principally imported from Austria-Hungary, the lower Danubian States, Italy, and Russia, at an exceptionally high point, especially as the governments of the Swiss cantons concluded to make large purchases in order to provide against the threatening fodder famine. A good part of the stocks bought was still on hand at the end of the year, as the scarcity turned out not to be as great as had been anticipated. The consequence was that the prices, which were quoted at 17 francs (\$3.28) per quintal (3.93 bushels) at the beginning of the year, had dropped to 15.50 francs (\$2.99) before the end of the year.

In oats, the trade was normal, with large transactions, and prices fluctuated between 18 francs (\$3.47) per quintal (220.46 pounds) at the beginning, 20 to 21 francs (\$3.86 to \$4.05 $\frac{3}{10}$ ) in the middle, and 17 francs (\$3.28) at the end of the year.

*Latest quotations of cereals.*—The latest market quotations of cereals are :

Description.	Price per bushel.	Description.	Price per bushel.
Wheat :		Oats :	
Hungarian—		Bohemian.....	\$0.55 to \$0.56
Superfine.....	\$1.05 to \$1.09	Russian.....	.44 to .50
No. 1.....	1.00 to 1.02	Barley.....	.88 to .96
No. 2.....	.97 to .98	Rye.....	.73 to .76
No. 3.....	.89 to .94	Maize (Indian corn).....	.71 to .76
Russian.....	.86 to .94		
American.....	.89 to .97		

*The milling industry.*—Corresponding with the trade in wheat, the business of milling was anything but prosperous in Switzerland last year. Increased means of production led to unsound competition, and the rich crops of grain, as well as of fruit and potatoes, added to the large stocks left from 1892, naturally caused a further decline in prices. The foreign competition

came principally from Italy and France, since the millers of these countries, in the exportation of flour, enjoy the benefit of having the duty on wheat refunded by their Government without even being required to furnish the proof that the wheat of which the exported flour was made had actually been imported. This, of course, gives the millers of these countries a great advantage, as the refunding of duty on the milled product, without proof of importation of the grain, actually places a premium on native, French, and Italian wheat, and Germany, anxious to "keep up with the procession," has now concluded to adopt the same policy. In the face of these disadvantages and the higher rates of labor in this country and the risks and uncertainties of trade, the Swiss millers find it difficult to carry on their business with any degree of satisfaction, even with a protective duty of 2 francs (38.3 cents) on a quintal (220.46 pounds) of flour in their favor.

In addition to the home product, there were imported into Switzerland in 1893, as seen from the table above, 279,329 quintals (313,929 barrels) of flour. In this importation, the several contributing countries participated as follows:

Countries.	Quantity.	Countries.	Quantity.
	<i>Barrels.</i>		<i>Barrels.</i>
France.....	89,610	Belgium.....	1,395
Italy.....	78,860	United States.....	1,219
Russia.....	48,728	European Turkey.....	1,092
Germany.....	46,182	Other countries.....	195
Austria-Hungary.....	43,279	Total.....	313,929
Danubian States.....	1,698		
La Plata.....	1,671		

This is an increase of 45,300 barrels (17 per cent) over the year 1892. There is certainly no good reason why American millers should not be able to compete with the other countries named, and succeed in securing more of this trade than they have heretofore done. The only explanation is that they have not, so far, made a systematic effort to remove the prejudice existing against American flour and bring their product into the market, not through commission houses in England, France, and Germany, but by direct importation.

*Importation of live stock.*—It is the same with live stock. Although, according to the report of the Swiss Agricultural Department, there were imported into this country in 1893 not less than 10,198 horses, valued at 5,438,743 francs (\$1,049,677); 41,968 head of beef cattle (calves not included), valued at 17,430,238 francs (\$3,363,034); 51,386 hogs, valued at 4,712,164 francs (\$909,448); and 92,461 sheep, valued at 2,752,368 francs (\$531,207), yet, as far as I can discover, not one head came from the United States. The principal countries of supply were Germany, France, Austria, and Italy. During the first six months of the present year the importations were still larger. According to a late publication, 28,915 fat steers, valued at 14,573,160 francs (\$2,812,608), were imported during

this period, as against 11,202 head, valued at 5,645,808 francs (\$1,089,641) in the same period last year; and of hogs 32,153, valued at 3,504,677 francs (\$675,403) as against 16,226, valued at 1,768,634 francs (\$341,346) in the same period last year.

The prices prevailing at present are also much higher than last year, and would certainly justify at least a trial shipment to the principal markets in Switzerland. Beef cattle were sold last year at 80 to 90 francs (\$15.40 to \$17.40) per quintal live weight (7 to 8 cents per pound); hogs at 1 franc (8½ to 9½ cents per pound live weight); sheep, dressed, 12 to 13 cents per pound; fat calves, live weight, 8 to 12 cents per pound. Young cattle are especially in demand at present for replenishing the stock sold off at a sacrifice last year, in consequence of the unprecedented failure of the forage crop.

A number of Argentine cattle bought by an association of Zurich butchers from a cargo which had arrived at Genoa from Buenos Ayres did not, according to newspaper reports, make a very good impression on account of their poor condition and rather rough appearance. The butchers of Zurich slaughtered them, however, and retailed the meat without announcing their source of supply, in the same way, and probably at the same prices, as meat from native or other imported cattle. It is possible that South American cattle can be brought here cheaper than cattle from the United States, but no doubt the latter are worth more, can be delivered here in better condition, and will find a more ready market than the former. I understand that an offer made by the Kirsch- und Handelsgesellschaft Zug to receive a lot of cattle on consignment for sale has not met with any favorable response from dealers in the United States, though the company undoubtedly can furnish the best of references, and probably would even be willing to give security, if required.

Direct communication between New York and Genoa, successfully carried on by steamers of the North German Lloyd, enables American shippers to send cattle and other products direct into the Swiss markets as quickly and at less expense (the carriage by rail being much shorter), than from any other port. The only requirement is the establishment of an agency at a central point, or the consignment of goods to established responsible firms. If the best quality of American cattle and other products are brought direct into the principal Swiss markets, and offered to dealers and consumers in the same ways and on the same terms and conditions prevailing here, there is scarcely any doubt but that the trade with this country might be considerably extended. So far, American dealers and manufacturers seem to have paid little attention to the requirements of the people and the state of trade in Switzerland, probably because the country is small and without a seaport of its own. Yet Switzerland, in 1893, imported goods to the value of 827,808,426 francs (\$159,766,026), while its exports only amounted to 646,451,193 francs (\$124,765,080).

WM. F. KEMMLER,

Horgen, September 18, 1894.

Consul.

## FRUIT FARMING IN LUXEMBURG.

The horticultural and agricultural prosperity of the Grand Duchy of Luxemburg is due less to the richness of its soil and the clemency of its climate than to the patient frugality and industry of its inhabitants and the untiring interest and liberal assistance of the Government. In general, the climate of the Grand Duchy is raw and chilly, the average temperature for the year being about 47° F. The number of rainy days in each year is about one hundred and forty. The northern portion of the Grand Duchy suffers much from cold northeast winds. Late frosts and severe atmospheric changes in the spring sometimes damage very seriously field, orchard, and vineyard crops.

The soil in the southern part of the country is good, and science and individual industry contribute to increase its productiveness to the utmost. In the northern (Ardennes) section the soil is bad and the climate severe.

The Grand Duchy of Luxemburg has a superficial area of 640,025 acres, and a population of 212,000, of whom fully three-fourths are engaged in agriculture and fruit farming.

The area devoted to agriculture is, relatively, very large, as is shown by the following: Field and orchard land, 308,750 acres; prairie, 62,716 acres; pasture, 40,821 acres; forests, 189,147 acres.

The small-farm system prevails. About 95 per cent of the farmers cultivate not more than one-fourth of an acre each. The repeated subdivision of farms has been carried so far that disastrous results are feared. A movement in favor of larger farms, capable of giving profitable employment to agricultural families has begun, and it is hoped that the evil will be palliated, though it can not be cured until a substitute is found for the dispositions of the code Napoleon relating to successions.

At the head of the administration of agriculture, is placed the agricultural commission. This commission directs the introduction of improvements, and lays its proposals before the Minister of State and the legislature. It is composed of farmers and agricultural experts selected from all the different cantons of the country, periodical changes being made in the membership of the committee. Under the direction of this committee is the state agricultural service (*service agricole*), which has for its special mission the propagation of agricultural improvements and the direction and execution of technical agricultural works, such as drainage, irrigation, and the like. It gives its assistance not only to syndicates and local associations but also—in most cases gratuitously—to individuals who seek its services.

In addition to the committees mentioned above, there are in the Grand Duchy of Luxemburg an agricultural experimental commission, a special committee on viticulture, and a state agricultural school, with a laboratory and experimental station. Moreover, nearly every village in the Grand Duchy has its local agricultural association.



Encouraged and instructed in this way, the farmers of the Grand Duchy of Luxemburg, in spite of all disadvantages of soil and climate, have succeeded in converting their beautiful little country into a vast garden.

Fruit culture is one of the principal industries of the Grand Duchy. It is in a flourishing condition everywhere except on the Ardennes plateau, where climate and soil unite in decreasing the vigor of the trees and the quality of the fruit. It is in the valleys of the Moselle and its affluents that fruit farming has reached its highest development.

The winter of 1879-'80 nearly annihilated the Luxemburg fruit farming industry, but the farmers did not lose heart, and the Government promptly came to their support. During several successive years, the Chamber of Deputies voted subsidies to farmers planting a fixed number of trees. Thus encouraged, the fruit industry, within a very few years, regained its former level of prosperity. The following table gives an approximate idea of what this growth has been, and also the amount of the subsidies which have been distributed by the State among the twelve cantons of the Grand Duchy:

Cantons.	1883.		1884.		1885.		1886.	
	Trees planted.	Subsidies accorded.	Trees planted.	Subsidies accorded.	Trees planted.	Subsidies accorded.	Trees planted.	Subsidies accorded.
Capelleu .....	215	\$20.07	4,555	\$190.20	560	\$166.00	3,458	\$215.20
Esch .....	348	12.74	2,751	175.00	1,813	136.40	3,618	249.40
Luxemburg .....	3,334	295.80	7,845	621.80	3,802	329.80	11,974	650.20
Mersch .....	1,116	81.60	4,508	383.00	1,618	138.80	7,401	397.80
Clervaux .....	235	35.00	1,035	68.40			703	48.60
Diekirch .....	7,234	341.00	253	22.40	6,979	480.60	6,292	329.20
Redange .....	1,846	136.20	458	39.80	1,539	136.20	2,976	206.00
Wiltz .....	197	47.80			3,141	312.20	1,872	100.80
Vianden .....	20	60.00		30.00	617	34.80	1,349	70.80
Echternach .....	3,660	357.20			4,420	402.60	7,842	483.60
Grevenmacher .....	4,642	299.40	86	9.20	7,303	567.60	9,703	526.00
Remich .....			2,207	200.80	2,174	133.00	2,052	132.60
Total .....	22,847	1,686.81	23,698	1,740.60	33,966	2,838.00	60,170	3,410.20

Cantons.	1887.		1888.		1889.		1890.	
	Trees planted.	Subsidies accorded.	Trees planted.	Subsidies accorded.	Trees planted.	Subsidies accorded.	Trees planted.	Subsidies accorded.
Capelleu .....	1,246	\$131.80	1,328	\$137.80	1,677	\$139.60	802	\$48.12
Esch .....	746	71.40	2,622	455.20	1,591	153.60	2,277	136.62
Luxemburg .....	3,647	345.60	4,537	451.40	4,405	382.80	5,274	328.96
Mersch .....	2,565	196.00	2,470	217.80	3,013	243.00	3,168	192.72
Clervaux .....	185	26.20	1,617	295.20	518	38.40	1,158	69.48
Diekirch .....	1,209	117.60	5,024	854.20	4,131	269.60	2,338	156.28
Redange .....	708	71.00	542	49.00	1,392	123.20	1,350	81.00
Wiltz .....	434	66.60	1,078	99.60	554	55.60	421	25.22
Vianden .....	24	3.00	419	42.20	346	35.40	732	43.92
Echternach .....	2,279	228.00	2,761	298.00	5,448	449.60	6,183	416.28
Grevenmacher .....	1,556	109.40	2,000	170.40	5,755	413.60	1,943	145.68
Remich .....	513	53.00	351	36.60	1,139	98.20	863	51.78
Total .....	15,112	1,419.60	24,689	3,107.40	29,969	2,402.60	26,509	1,696.06

The foregoing table shows that 236,960 fruit trees were planted under the control of the agricultural service during the eight years 1883-'90. The total number of new trees planted during this period exceeded 470,000.

Twenty years ago, nearly every road in the Grand Duchy was bordered by rows of Lombardy poplars—gigantic and majestic, no doubt, but useless and even injurious. The roots of this tree radiate in every direction 30 and, sometimes, even 60 feet, causing much injury to the neighboring fields. About twenty years ago, thanks to the initiative of the Government, a movement was inaugurated favoring the replacing of the poplar trees by elm, chestnut, plane, linden, and other trees. Still later, a further improvement was introduced. This consisted of the employment of fruit trees, especially of apple trees—the preference being given to the varieties best suited for the production of cider—for bordering purposes. To-day, this roadside fruit culture is found profitable and satisfactory, both on highways and country roads.

The success which has been achieved in roadside fruit culture in many German states, particularly in Würtemberg, Palatinate, Baden, Saxony, etc., has induced the authorities of the Grand Duchy of Luxemburg to abandon what is now regarded as an error of the past, and to adopt with enthusiasm the new system. As an example of the interest taken in this subject by village authorities, the commune of Ettelbrück may be cited. In the course of a single year (1890), this commune planted along its parochial roads more than 600 fruit trees. There are many rural communes having from 500 to 1,000 inhabitants which have planted from 1,000 to 2,000 fruit trees along their roads.

The Government causes a professor of the agricultural school at different times and places to instruct cantonal officials and overseers of highways in the science of caring for, pruning, and training fruit trees.

In the Grand Duchy of Luxemburg, there are many fruit-tree nurseries, which, in addition to supplying the home market, do a large export business, the principal shipments being made to Germany and Russia.

Luxemburg nurserymen obtain the best results by establishing their nurseries in a strong, rich, deep, well-worked, and well-manured clayey soil, which has been loosened in advance to a depth of 20 to 30 inches. The young trees raised in this sort of earth are transplanted to a lighter, alluvial or silico-argillous soil, where they develop vigorously.

Three different systems of alignment are followed in setting out the trees, the rectangular, square, and quincunx forms. The quincunx form is considered the best. In the nurseries, the number of trees per are (119.6 square yards, or 0.02471 of an acre) is about 300.

The average prices obtained by the nurserymen for young apple trees are: First choice (extra)—having at one meter (39.37 inches) from the ground a circumference of  $3\frac{1}{2}$  to 4 inches, 24 cents each, or \$15.44 per hundred; second choice, having at one meter (39.37 inches) from the ground a circumference of 3 to  $3\frac{1}{2}$  inches, 19 cents each, or \$12.54 to \$15.44 per

hundred; third choice, having at one meter (39.37 inches) from the ground a circumference of  $2\frac{1}{2}$  to 3 inches, 14 cents each, or \$9.65 to \$11.58 per hundred. On sales of 1,000 or more trees, a discount of 10 per cent is allowed. The prices for pear trees are somewhat higher.

Every year the insect *Anthonomus pomorum* destroys fully one-half of the apple crop of the Grand Duchy. The attempt has been made to get rid of this enemy by sprinkling every week here and there with asafetida the bark of the trunks and branches of the trees. The *Anthonomus pomorum*, having a fine scent, is, it is thought, driven away by the disagreeable odor of the asafetida. It is claimed that this experiment has proved more or less successful.

The cider industry supplies only the home market, there being no exportation. Large quantities of apples and pears are exported to Germany and Belgium, those sent to Germany being used principally in the manufacture of cider and perry, while those shipped to Belgium are converted into marmalades.

In recent years, the making of cider and perry has very largely increased. It is believed in Luxemburg that, as the consumption of these fruit beverages increases, the use of brandy will diminish, and that thus the national level of morality will be raised.

Many fruit farmers in Luxemburg believe that by mixing with good, sweet apples a certain quantity of sour, overripe, and even rotten ones, the quality of the cider is improved. This is, however, a mistake, for when it becomes overripe the fruit loses a part of its juice and sugar. The fruit contains, when green, 6 per cent of sugar; when ripe, 10 to 12 per cent; and, when overripe, only 8 per cent. There is, moreover, in overripe fruit an alteration of the organic matter which is detrimental to the good quality of the cider.

Twice as much perry as cider is produced in the Grand Duchy of Luxemburg. Very often, the juice of apples is mixed with that of pears. This agreeable beverage is, at will, made to approach more nearly to cider or to perry by varying the proportions of the juices used.

The prices of apples and pears, and of the cider and perry produced from them, naturally depend upon the largeness of the available fruit crops. The average price of 100 kilograms (220 pounds) of pears varies from 80 cents to \$1, the average price of a like quantity of apples being \$1.40 to \$1.60. The market values of perry and cider are, respectively, about \$2.50 and \$3.75 per hectoliter ( $26\frac{2}{3}$  gallons), *i. e.*, about 10 and 15 cents per gallon.

For the advancement and encouragement of the cider industry, the Government proposes to send abroad a number of young men to obtain theoretical and practical knowledge, and to make reports on improved processes and methods of manufacture. Upon their return home, these young men will go about from canton to canton giving theoretical and practical instruction relative to the manufacture of perry and cider.

The tables given below show that brandy (*aqua vitæ* obtained from fruits, grains, potatoes, etc.), is produced in a large number of Luxembourg distilleries. Luxembourg law recognizes two sorts of distilleries—

(1) Agricultural distilleries, namely, (a) all which distill less than 10 hectoliters (264 gallons) per diem, and (b) all which use only one or two stills, one with a capacity of less than 500 liters (132 gallons), which is used exclusively for the distillation, the other with a capacity of less than 250 liters (66 gallons), which is reserved for the rectification of the spirits, the boiling of the potatoes and the heating of the water needed in the work of distillation. The proprietor of an "agricultural distillery" must possess at least four head of great cattle, exclusive of horses.

(2) Industrial distilleries, which includes those establishments which distill more than 10 hectoliters of fermented matter daily, as well as those whose proprietors do not possess at least four head of great cattle.

The agricultural distilleries pay an excise of 29 centimes (5½ cents) per hectoliter (26½ gallons) and per working day. For the same volume, industrial distilleries pay 35 centimes (6¾ cents) per diem. Nearly all of the distilleries are very small.

Though it is a member of the German customs union, the Grand Duchy of Luxembourg has its own liquor excise laws.

The following tables give the statistics of the Luxembourg brandy industry for the four years 1888 to 1890-'91.

*Number of distilleries.*

Fiscal year.	Total.	Not in operation.	In operation.	Agricultural distilleries.	Industrial distilleries.	Distilleries using non-farinaceous matter.
1887-'88.....	2,084	474	1,610	679	47	884
1888-'89.....	2,078	458	1,620	549	43	1,028
1889-'90.....	2,042	863	1,179	696	57	426
1890-'91.....	2,032	700	1,332	656	30	646

*Materials employed.*

Materials employed.	1887-'88.	1888-'89.	1889-'90.	1890-'91.
	<i>Pounds.</i>	<i>Pounds.</i>	<i>Pounds.</i>	<i>Pounds.</i>
Potatoes.....	121,000			
Cereals.....	7,568,000	6,626,180	7,053,200	6,970,480
Molasses.....	112,640	36,520		
			<i>Quarts.</i>	<i>Quarts.</i>
Grape cake.....	2,561,680	3,379,640	1,141,853	1,765,632
Apples, pears, etc.....	2,888,600	10,122,420	612,300	1,383,254
Berries.....	86,460	115,720	10,349	3,274
Liquid wine lees.....	184,140	216,700	139,392	141,082
Fruits having stones.....	237,380	977,240	27,034	104,861
Grape wine.....			634	528
Fruit wine.....			845	422

*Quantity of pure alcohol (100 per cent) produced.*

Establishments.	1887-'88.	1888-'89.	1889-'90.	1890-'91.
	<i>Quarts.</i>	<i>Quarts.</i>	<i>Quarts.</i>	<i>Quarts.</i>
Agricultural distilleries using cereals.....	662,006	502,656	535,709	526,733
Industrial distilleries using cereals.....	180,154	164,947	190,819	190,819
Agricultural distilleries using potatoes.....	4,858			
Distilleries using nonfarinaceous primary materials.....	95,779	206,448	49,632	91,766
Total.....	942,797	874,051	776,160	809,318

*Government receipts from the liquor tax.*

1887-'88.....	\$40,944.25
1888-'89.....	46,514.50
1889-'90.....	39,372.25
1890-'91.....	42,030.00

About 2,000,000 quarts of brandy are consumed annually in the Grand Duchy of Luxemburg, the average quantity consumed per head of population being almost 10 quarts. By far the larger part of this brandy is consumed in the mining sections of the country. The population of the Ardennes give the preference to potato brandy, but in other parts of the country more grain and fruit brandy is used.

The average annual production of the distilleries of the Grand Duchy amounts to about 1,700,000 quarts of brandy, one-sixth of the entire quantity produced being fruit brandy.

GEORGE H. MURPHY,  
*Vice-Commercial Agent.*

LUXEMBURG, *September 21, 1894.*

## A PERUVIAN SUGAR HACIENDA.

As the importation of sugar into the United States figures prominently in our commercial relations with foreign countries, it will doubtless be regarded as of no little importance in considering the subject of the extension of American commerce, to ascertain the sugar-producing capacity of the various countries where it is both desirable and practicable to extend this commerce. When it is considered that it is due in a great measure to the inventive genius of American machinists that the sugar industry in Louisiana and other states has been maintained, it follows that the American machinist and the manufacturer of sugar machinery are equally interested with American tradesmen in obtaining information upon this subject.

On the 20th ultimo, through the courtesy of our minister at Lima, Hon. James A. McKenzie, I was honored with an invitation, by Mr. Raphael Canevaro, to accompany Minister McKenzie and himself on a visit to the great sugar hacienda, "Caudevilla," the largest in central Peru.

"Caudevilla" is owned by the firm of Joseph Canevaro & Sons. General Canevaro, recently the minister at Washington, now First Vice-President of

Peru, and Mr. Raphael Canevaro, consul-general of the Netherlands at Lima, are the sons referred to in the title of the firm. These gentlemen belong to the distinguished family of that name. Their father, Count José Canevaro, Duke of Castelviri, came to Lima some sixty years ago as consul-general of Sardinia.

"Caudevilla" is situated about 7 miles from Puente Piedra, a station lying about 15 miles northeast of Lima, on the railway to Ancon. A tramway connects the hacienda with Puente Piedra, which, besides the transportation facilities it affords, yields some revenue from the business it receives from the population of 1,000 souls on the hacienda.

The information which I am enabled herein to give, was furnished by Consul-General Canevaro.

The seat, or headquarters, as it might properly be called, embraces an imposing quadrangle of vast structures. The first to the right on entering the court of several acres in size, is the residence, forming an entire façade. It is a massive two-story building, with immense parlors, dining room, and thirty-five or more other apartments.

The sugar house forms the second façade, the warehouse the third, and the stables, store, and hotel for transient people the fourth. Trains, from early morn, roll in and out in this vast court, giving it no little life and animation. The buildings, save the sugar house, which is of brick, are all of adobe. They present a substantial appearance and are kept in good repair.

The "Caudevilla" property, including the low mountains encircling it, covers an area of about 104 square miles. The cultivable area measures about 850 fanegadas, which, calculated at 8 acres per fanegada, is equivalent to 6,800 acres.

The great hacienda is traversed by the Rio Chillon, which is spanned by a substantial stone bridge of seven arches. It unites on one side the old estates of "Galinago," "Pampa Libre," and "San Pedro Alcantara;" on the other, "Caudevilla," "Huacoy," and "Punchauca." Once, these were separate haciendas. They now constitute "Caudevilla," a veritable principality in extent.

The original cost of "Caudevilla," as now constituted, was about 2,000,000 soles when the sol was worth well-nigh \$1. It would not bring this sum now. The original cost of the buildings, tramways, machinery, etc., approximated 300,000 soles. Mr. Canevaro estimated the value of the building now at \$75,000, and of the rail and tramways and equipments at \$35,000.

There are 450 fanegadas (3,600 acres) cultivated in cane, and 150 fanegadas (1,200 acres) are in pasturage. A considerable acreage is devoted to the cultivation of corn. Last year, the yield in sugar was about 8,000,000 pounds, which, valued at 3 cents (gold) per pound, would amount to \$240,000. The cut cane averages from 4½ to 5 feet in length. It is closely jointed and heavy.

It never rains; hence the cultivation is by irrigation, the Rio Chillon, a mountain stream, furnishing the water. There is an *azequia*, or deep canal,

5 feet wide and curbed. This *asequia* furnishes power for various purposes and plenty of water for the mill and other departments of the hacienda. Eight hundred mules, horses, and bullocks are employed. Mules are worth about 50 soles\* (\$25); work horses, 100 soles (\$50); and bullocks, 70 soles (\$35). The laborers are Indians, negroes, and Chinese. Each class have their village. The Indian village is called Pueblo Viejo; the negro village, Guiana; and the Chinese, Hongkong and Shanghai. Labor is paid all the way, from the field to the sugar house, at from 60 centavos (30 cents) to 1.20 soles (60 cents) per day of ten hours; 3 soles per day (\$1.50) is the average paid to engineers and professional people. Women and boys get from 50 to 60 centavos (25 to 30 cents) per day. Besides, the laborers receive a pint of rice per day, worth about 5 centavos (2½ cents), or commutation in lieu thereof.

The laborers build their own adobes and cane huts, the materials being furnished to them, and pay no rent. There is a store, where it is optional for them to trade. Settlements are made weekly. There is entirely free worship, and school facilities are given the children at a nominal price. Idling children are brought to the school by the employees. The movements of the stock and of the laborers are directed each day by the superintendents. There is telephone communication between main points, where subsuperintendents are located. From "Caudevilla," the headquarters, to "Punchauca," one of the points adverted to, the distance is 9 miles.

From 400 to 500 persons go to work daily. They are noted by the superintendents and apportioned to the various kinds of work. Laborers are allowed pay only for the days of labor. There is no trouble to get labor. Laborers do not like cane cutting, and a premium of 5 centavos (2½ cents) per day, is given to chiefs for bringing men to this work.

Formerly, coolie laborers were employed in great numbers, but their importation has ceased owing to the opposition which has been made to its continuance.

The Chinese have the best and cleanest quarters. They are better dressed, and live more comfortably than the other laborers. The Chinese have their church, which is quite ornamental and well kept.

Sick laborers are treated on the place, unless they are seriously ill, when they are sent to hospitals in Lima.

The policing is done by an officer and five soldiers, who are stationed on the hacienda. One of the employees is the comisario of the valley, and the police are under his direction. No pay is given to this force by the owners, they having only to furnish the feed for the horses and board for the officers. The police are for the protection of the entire valley.

There is a hostelry on the road to Canta, which is kept by an Italian, who also keeps a small store. The Indian mountaineers, who bring their produce to market by this road, get accommodations at this inn for one sol

\*The consul estimates the sol at 50 cents; the United States Treasury Department estimated it on July 2, 1894, at 45.7 cents.

(50 cents) a day. They pay 10 centavos (5 cents) a day for the use of the pasturage for their animals.

The taxes on the whole place amount to but 1,000 soles (\$500) a year. There is no tax on sugar made in Peru, but there is an import tax on foreign sugars. There is an excise tax on the proof spirits (rum) distilled from the molasses at the mill. As much as 2,000 gallons of spirits can be made in a day. At this time it nets about 52 centavos (26 cents) per gallon. Buyers come from Lima to get it, and they pay the excise tax in Lima. The average output is about 700 gallons a day.

Sugar refining in Peru has altogether ceased.

Inclosures are made of adobe walls, about 4 feet high and  $1\frac{1}{4}$  wide. These cost about 20 centavos (10 cents) per running yard. They last from 20 to 30 years. Repairing is done at proportionate cost.

Work in the field is continuous the year round, the climate being so genial and the weather so uniformly good that this can easily be done.

No fertilizers are used, but Mr. Canevaro is of the opinion that they could, in moderation, be used to advantage in old ground.

The cane is carried first to the mill over portable tramways to the stationary tramways, where, by means of a winch operated by steam, it is transferred to large cars which carry it to the sugar house. Sugar making goes on for ten months in the year, the other two being devoted to cleaning and repairing the mill and machinery. Three locomotives and fifty cars constitute the equipments of the stationary tramways. They belong to the hacienda.

There is a vast reservoir, which supplies the water for irrigating when the Rio Chillon is low.

The cane is ripened by cutting off the water. The first cutting is generally made two years after planting; subsequently every eighteen months. The cane will give from five to seven cuttings.

The soil has a thickness of several feet, is light and sandy, and grayish in color. It is easily worked by oxen, and also with steam plows. Cane is planted in rows 2 feet apart. A single cutting down of the grass is sufficient. There is no disease of the cane, no storms, and no freezes.

As to the yield per fanegada (8 acres), Mr. Canevaro stated that some claimed as high as 100,000 pounds of sugar. He had obtained this yield from ground which had been previously planted in Indian corn. He generally got about 85,000 pounds per fanegada in new land. The latter yield is, therefore, 10,628 pounds of sugar per acre—an enormous yield.

The sugar house measures about 65 by 300 feet. It has a wing used for warehousing, etc., measuring about 60 by 125 feet. Crude petroleum, obtained in Peru, and bagasse comprise the fuel used to operate the machinery. Corn cobs are used to operate the portable and smaller engines. The mill can grind 180 tons of cane in twelve hours. Not more than 72 per cent of the saccharine matter is obtained from the cane, and the density of the juice is from 8° to 12° Beaumé. The average density is 10°. The mill has three



rollers. The process of sugar making is by triple effect. The engine is of 40 horsepower. The equipment consists of six copper boilers, or vats, and vacuum pans. The machinery was brought from England, Germany, France, and the United States. A large blacksmithing and repair shop is attached to the sugar house. There is no diffusion apparatus. There are eight centrifugals. There is a large fermentation room and distillery for the manufacture of spirits (rum) from the molasses and refuse sugars. This is a very remunerative and important branch of the sugar-making industry.

At the time, in Lima, first-grade sugar was selling at 7.50 soles per quintal (about  $3\frac{3}{4}$  cents, gold, per pound); the second grade at 5 soles per quintal, or  $2\frac{1}{2}$  cents per pound, gold. The sugar is put up in bags.

One man conducts the spray of petroleum process at the furnace. For safety, the huge petroleum tanks are located at some distance from the fires.

There is a large vegetable garden and orchard, where, besides all kinds of vegetables, chirimoyas, granadillas, guavas, strawberries, some coffee plants, bananas, apples, pears, figs, oranges, etc., are grown. The cocoa-nut, pineapple, and many other fruits and plants can likewise be grown on the place.

Earthquakes are a bugbear, said Mr. Canevaro. Shocks are occasionally felt, but buildings are never injured.

"Caudevilla" lies in a series of valleys flanked by low mountains usually presenting an arid appearance. The scenery is grandly picturesque. In July and August, the season of fogs and mists (the Peruvian winter), some of these mountain slopes throw out an abundance of very nutritive grasses on which the stock get fat in a short time.

Mr. Canevaro informed us that in northern Peru there are several larger sugar haciendas than "Caudevilla."

The area of unoccupied land in Peru capable of producing the cane is incalculable in extent; it is measurable only by the possibilities of irrigation.

LEON JASTREMSKI,

*Consul.*

CALLAO, *July 20, 1894.*

## SEAL CATCH OF 1894.

Official statistics of the British Columbia sealing fleet for the year 1894 have been completed, and will be found in the exhibit inclosed herewith, just published by the Victoria Daily Colonist, and taken from the report of Mr. A. R. Milne, collector of customs at Victoria.

They show the catch to be the largest ever made in a single year, and, as a result of the season's experience, the fear once entertained that the hunters would be seriously handicapped from the compulsory use of the spear, has been overcome. The white hunters have quickly learned its use, and now are as skillful with it as the Indian. It will be gratifying to learn

that the catch was not so fatal to the females as was once claimed, the statistics showing the proportion of males caught to be much larger than expected.

Some time ago, I received a letter from Lieut. A. V. Wadham, commanding the U. S. S. *Mohican*, making inquiry as to the time of trial of the British sealing schooner *Favorite*, one of the two vessels seized this year. I addressed a letter to Collector Milne upon the subject, and in reply he stated that he took no official action in the matter, and that he was advised by the commander in chief of the Pacific station that the vessel was released from any embargo.

W. P. ROBERTS,  
Consul.

VICTORIA, B. C., November 15, 1894.

#### REPORT OF COLLECTOR MILNE.

An interesting report on the seal fishery of 1894—more than usually important because of the new points upon which information is given—has just been completed by Mr. A. R. Milne, collector of customs, and will be at once forwarded to Ottawa. In accordance with the terms of the international agreement, the captains of vessels operating in Bering Sea were required to enter in their log books the latitude and longitude where the operations of any day upon which they took seals were carried on, and this being set forth in complete detail in the report just mentioned will be precise data as to the traveling habits of the seal. To make this part of the information more clear, a comprehensive chart will accompany the report.

Another highly interesting point dealt with is the proportion of male and female seals, respectively, taken, statistics showing this having an all-important bearing upon the question of whether or not the seal herd is in danger of extinction if operations are continued under the regulations at present existing. It will be noticed that the figures below given show a much larger proportion of males than the Americans have all along contended have been included in the catch, for they held that the pelagic sealing was disproportionately fatal to the females.

The following is an abstract of the official table compiled by Collector Milne from the statements of the captains:

Vessels.	Tons.	Crews.		Catch.					Total.
		White.	Indians.	British Columbia coast.	Japanese coast.	Copper Island.	Bering Sea.		
							Male.	Female.	
Enterprise.....	69	22			1,254	314			1,568
Rosie Olsen.....	39	6	16		1,043		425	431	1,899
Umbrina.....	99	25			2,588	153	30	30	2,801
Oscar and Hattie.....	81	24			1,733	176			1,909
Diana.....	150	19			1,961	433			2,394
Brenda.....	100	26			2,383	343			2,726
Arietis.....	86	25			1,197		39	52	1,288
Casco.....	63	22			1,926				1,926
Dora Seiwerd.....	24	26			2,584				2,584
Walter A. Earle.....	68	8	20		1,471		155	517	2,143
Fawn.....	159	6	18		911		310	336	1,557
Agnes Macdonald.....	107	26			1,707	471			2,178
W. P. Hall.....	99	24			710				710

*Statistics of the sealing industry for 1894—Continued.*

Vessels.	Tons.	Crews.		Catch.					Total.
		White.	Indians.	British Columbia coast.	Japanese coast.	Copper Island.	Bering Sea.		
							Male.	Female.	
Mermaid .....	73	25			1,603	503			2,106
City of San Diego.....	46	16			1,304	250			1,554
Mary Taylor.....	43	19			874	250			1,124
Libbie.....	93	22			1,010	200			1,210
May Belle.....	58	14			925	907			1,832
Mary Ellen.....	63	23			1,909	86	105	352	2,452
Viva .....	92	26			1,437				1,437
W. P. Sayward.....	60	20			606	35			641
Penelope .....	70	20			1,306	296			1,602
Vera .....	60	19			1,075		80	115	1,270
Carlotta G. Cox.....	76	24			1,947				1,947
Triumph .....	98	8	36	1,320			1,163	2,077	4,560
Otto.....	86	25			1,014	623			1,637
E. B. Marvin.....	96	23			2,118				2,118
Sapphire.....	109	8	32	535			1,226	879	2,640
Annie E. Paint.....	82	26			1,497	531			2,028
Geneva.....	92	27			1,092	558			1,650
Teresa.....	63	25			1,102	120			1,222
Sadie Turpel.....	56	22			1,783	171			1,954
Ocean Belle.....	83	22			530	274			804
Maud S.....	97	24			1,343	86			1,429
Aurora.....	41	18			693	21	79	138	931
Florence M. Smith.....	99	27			96	81			177
Beatrice.....	66	5	22	358			342	818	1,518
Mascot.....	40	4	16		558		299	246	1,103
Favorite.....	180	5	37	606			752	488	1,846
Annie C. Moore.....	13	8	37	309			938	1,009	2,256
Labrador.....	25	5	14	308			179	381	868
Wanderer.....	25	2	7	400					400
Pioneer.....	66	24		418		1,263			1,681
Saucy Lass.....	38	7	17	170			290	378	838
Borealis.....	37	6	20	303			90	1,059	1,452
Katharine.....	82	6	26	269			490	569	1,328
Ainoko.....	75	5	22	467			1,092	565	2,124
Kate.....	58	5	20	79			303	564	946
Shelby.....	16	5	10	34			232	145	411
Venture .....	48	3	17				417	492	909
Walter L. Rich.....	76	9	25	691			1,000	749	2,440
Mountain Chief.....	23	1	13	175					175
Fisher Maid.....	21		8	92					92
Minnie.....	46	6	20	488			679	986	2,153
San José.....	31	5	14	20			256	593	869
Kilmeny.....	19	2	12				307	327	634
Henrietta.....	31	5	17	315			427	340	1,082
C. D. Rand .....	51	7	22	357					357
Beatrice.....	49	21			1,703				1,703
Canoe catch by Indians.....				3,989					3,989
Total.....	3,866	888	518	11,703	48,993	7,437	11,705	14,636	94,474
Catch of American schooners landed at Victoria.									
Louis Olsen.....					435		18	66	519
Annie Matilda.....					7				7
Josephine.....					48				48

The report states that in Bering Sea the catch was made outside the 60-mile protected zone in latitudes 55°, 56°, and 58°, and longitude from 171° to 175°, operations being carried on from the 1st of August to the middle of September. On the Japanese coast, sealing commenced at about latitude 36° and continued north. There were none of the interruptions usual of late years experienced by those who operated in territory adjacent to Russian waters, the vessels all keeping well outside the 30-mile zone, mainly operating about 100 miles south-east of Copper Island. On the British Columbia coast, sealing commenced at about latitude 37°, thence proceeding northward. The fleet returned to port early in May, the close season being then on, and at the end of July those of the ships having the requisite crews of spearsmen set off for Bering Sea to try their luck under the new regulations. Considering everything, those who were in position to make this experiment with any hope of fair reward did very well, but, taking the whole fleet, it is claimed that the season has been barren of profit or advantage, except that of the crews, who were enabled to make fair wages. Of the total of fifty-nine vessels operating, only thirty-two went into the sea. The season's catch is thus summarized and compared with that of the previous year:

Description:	1894.	1893.
Number of vessels.....	59	55
Men in white crews.....	818	847
Men in Indian crews.....	518	432
British Columbia coast catch.....	11,703	29,113
Japan coast catch.....	48,993	29,206
Copper Island catch.....	7,437	12,013
Bering Sea catch.....	26,341	.....
Total Canadian catch.....	94,474	79,332

The above is, of course, exclusive of the skins shown in the official statement to have been landed at Victoria by United States vessels, and which bring the total handled at this port up to 95,048.

A private meeting of sealing men was held yesterday afternoon. It is understood that one of the questions which came up was in regard to the rate of pay to be given to hunters during next season. The method hitherto followed has been to pay hunters a fixed sum for each skin taken, but many vessel owners consider this an unsatisfactory method, and propose that hunters should be shipped on "a lay," and be paid a certain proportion of the value of each skin according to the market price. Nothing definite was arrived at, a decision being reserved for another meeting, to be held soon. Those who were present did not care to give out any information as to the price proposed until the matter had been definitely settled.

The owners of the schooners *Favorite* and *Wanderer*, which were the only sealers seized this year, and which were dismissed from custody without any formal investigation, have filed claims for damages with Collector Milne.

## DUTY ON COTTON-SEED OIL IN GERMANY.

I have the honor to notify you of a bill now before the federal council (Bundesrath), raising the duty on cotton-seed oil from 4 to 10 marks (from 95.2 cents to \$2.38). This appears to be only one of a number of efforts made by the landowning party (*Agrarier*) and the protectionist manufacturers to strike at any article of importation that can be used for food. Cotton-seed oil, in its refined stage as table oil, as well as an ingredient of manufactured butter, is to be dealt a blow.

I submit the translation of a clipping from the *Vossische Zeitung*, which ranks among the more liberal newspapers here:

[From the *Vossische Zeitung* of November 11, 1894.]

The bill for a change in the customs tariff which has been proposed to the federal council (*Bundesrath*) is, without doubt, identical with the proposition made to the Imperial Diet (*Reichstag*) toward the close of the last sitting, but which did not pass.

Among the proposed increase of duties only the augmentation of that on cotton-seed oil was really important, which fully met the demands of the protectionist oil manufacturers, and at the same time those of landowners (*Agrarier*).

The duty, which was then 4 marks (95.2 cents), is to be raised to 10 marks (\$2.38). Cotton-seed oil, which is meant for use in soap factories, is to be altered under official supervision (*amtlich*), and when thus changed the duty is to be put down to 3.50 marks (83.3 cents).

According to the existing tariff, cotton-seed oil, linseed, palm nuts, and copra enter free; palm and cocoa oil pay 2 marks (47.6 cents); linseed oil and cotton-seed oil, 4 marks (95.2 cents); rape, poppy seed, sesamum oil, and peanuts are subject to a duty of 2 marks (47.6 cents), but the oil extracted from these articles, a duty of 10 marks (\$2.38).

From now on, cotton-seed oil alone is to be subject to a high duty. Interested parties wished to go a step further; they asked that at the same time the duty on oil-bearing fruits, nuts, and seeds should be entirely abolished. But the federal council did not agree to it.

The increase of duty on cotton-seed oil rests on the following grounds: Its employment for food purposes has risen from 64,484 double hundredweights (142,000 pounds) in 1885 to 273,823 double hundredweights (over 600,000 pounds) in 1893. By means of perfected methods of refinement, people are able, so it is claimed, to make a fine table oil from cotton-seed oil, which is especially used for the making of artificial butter, whereto its large proportion of "palmitine" particularly adapts it, as well for the preserving of fish.

That means that cotton-seed oil is the culprit, but the sufferer is oleomargarine.

As long ago as 1890, the federal council rejected a resolution passed by the Imperial Diet in 1887 relating to the raising or changing of the duties for seeds and oils in question—changes in sympathy with the rise in duty on grains. The federal council did so, because, in accordance with facts established by examination, the occasion was not propitious for proposals looking to an exhaustive remodeling of the tariff paragraphs in question, and with regard to the question whether certain special alterations might be pointed out, because the decision as to them must be postponed until a new revision of the tariff.

Since that time, the grain duties have been lowered again; nevertheless, the Government proposes a rise in [the duty on] cotton-seed oil.

Under these conditions, it is much to be feared that the landowners (*Agrarier*), and the industrial protectionists will labor together in order to put through a rise in the duty. That means a serious increase in the cost of materials for the oleomargarine factories, since, hitherto it has been possible in America, it is true, but not in Germany, to produce a fine table oil out of cotton seed oil.

CHARLES DE KAY,  
*Consul-General.*

BERLIN, *November 13, 1894.*

In a report to the Department under date of November 17, Consul Merritt, of Barmen, recites the same facts as those given by Consul-General De Kay, and adds:

I had hoped to be able to report that there was a sincere desire on the part of the German people to join with the people of the United States in a mutual effort for the extension of the

ommerce of both countries. The foregoing, together with the recent edict against American beef, would indicate, to a certain extent, a different attitude in this country toward the enlargement of sales of American products.

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## DRIED APPLES IN GERMANY.

I have ascertained, in a semiofficial way, that a movement is now being set on foot by the Imperial German Government, and is already engaging the attention of the authorities of this city, and, I presume, of the other cities of the Empire, looking to the complete exclusion, under the imperial law regarding the traffic in articles of food, etc., of May 14, 1879, of dried and evaporated apples from the United States, which are found on arrival in Germany to contain more than a specified quantity of metallic zinc, arising from the drying of the apples on zinc plates or frames.

Each locality determines for itself what quantity of zinc the apples consumed therein can contain without being detrimental to health; but the tendency would seem to be to exclude the fruit when found to contain any zinc whatever. The laws of Hamburg prohibit the sale or offering for sale of apples having more than 0.01 per cent of metallic zinc. By metallic zinc is meant the actual amount of the metal left after separating the chemical combination of zinc and the acid of the apples.

For a number of years, dried apples, in the form of slices, pieces, or rings, have been imported into Germany from the United States, and it has been observed that this fruit often contains zinc in such quantities that, according to medicinal authority, the consumption of the same may prove detrimental to health. The German authorities have, in consequence, since about five years ago, endeavored by every possible means to prevent the importation of American dried fruits containing zinc, and to bring about the judicial punishment of the venders of such merchandise.

In many cities, as for instance, Hamburg, large quantities of dried American apples containing zinc have been confiscated by the police authorities or forcibly reexported. The courts have, in many cases, unequivocally decreed that the sale of dried apples containing zinc must be regarded as an offense against the German food law, in so far as the consumption of articles of food containing zinc shall be liable to injure human health.

The opinion of the medical authorities regarding the contents of zinc of the dried American apples is that the smallest quantities of zinc may lend articles of food qualities detrimental to health.

Of late, the control of dried American apples in Germany has become more rigid, on account of an appeal of the German chancellor to the federated governments, requesting them to instruct the respective authorities to supervise the traffic in these goods; to have samples examined by food chemists, and, if found necessary, to lodge complaints against the sellers of goods injurious to health.

The sequel to these investigations is not unlikely to be the issuing of an order forbidding the sale in Germany of apples containing zinc.

There is no doubt that the American trade in dried apples would suffer severely through such a measure, and the only way for the purchasers of such goods to protect themselves against losses would be the removal of the causes for the existence of zinc in the apples.

It is safe to assume that these causes are not attributable to any condition of the soil, but that the zinc gets into the apples during the drying process on zinc plates or frames, the acid of the apples chemically absorbing zinc.

Although through the employing of zinc plates or frames, the dried apples retain a fine, light color, it would not seem to be advisable to employ such means for the sake of a comparatively small and purely external advantage.

Racks, or frames of wood, can be used just as well as those made of metal, or the apple slices might even be strung upon strings or cords. These methods are often employed in Germany, and, therefore, the brownish color of the products obtained through them would not put them to any disadvantage, so far as their importation into Germany is concerned.

The above are almost the literal ideas of a gentleman here with whom I have conversed fully on this subject, and who has given me much valuable information.

While the object in making this report is to warn our exporters of dried fruit and other food products that it is all-important that, at this particular juncture, the articles sent by them to this country should be so prepared in every way as to offer no grounds for complaints on the part of either German officials or competing dealers here, such as might be successfully used to injure or destroy our trade, I do not feel disposed to admit, by any means, without further proof, the full extent of the alleged defects in our food products, that are being claimed here.

Exporters who really send to this country unhealthy and inferior articles must, and ought to, expect disadvantages for their goods when competing with purer ones; but I feel convinced that our Government, upon the proper representations, will take all the necessary steps to protect the healthful and unadulterated wares of our exporters from unfair and unreasonable interference, when offered for sale in the markets of Germany, and that it will use every means to prevent any restrictions being imposed upon them here, save such as are actually justifiable from a sanitary standpoint, and such as are applied to similar articles when produced here, or imported from other countries than the United States.

W. HENRY ROBERTSON,  
*Consul.*

HAMBURG, *October 29, 1894.*

## SUPPLEMENTARY REPORT

At the request of that gentleman, I have the honor to herewith transmit a report, containing one inclosure, from the United States consular agent at Flensburg, on the subject of "American Apple Rings."

It will be noticed that in my report of the 29th instant, I had already called the attention of the Government to the dangers besetting our export trade in dried and evaporated apples in Germany, and to the necessity on the part of our exporters of observing every caution in the curing of fruit and other food products for this market to prevent their adulteration.

I am not at all convinced that the fault lies entirely with our people, but believe that, for various reasons, any possible unhealthiness in the fruit arriving has been misrepresented and exaggerated.

W. HENRY ROBERTSON,

*Consul.*

HAMBURG, *October 30, 1894.*

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[Inclosure.]

In my reports of last year to the Department of Agriculture, I had occasion to bring to notice the attacks made in German papers against American products, and how necessary it is to prevent this for the benefit of the American trade.

I mentioned then only American seeds—clover, timothy, etc.,—which are supposed to have been adulterated and worthless, but now I name an American export article—apple rings. Warnings, as the inclosed show, can be read from time to time in German papers, and, in consequence, these goods are purchased here very little.

I do not really know if the adulteration with salt of tin is made in America, or if these warnings only come from German manufacturers. Should the first be the case, it is high time to prevent such manipulations; otherwise, the trade with Germany will be spoiled entirely.

The market for dried fruits, especially apples and peaches, in Germany, is very important. Should the statement in the articles be untrue, the American manufacturers should contradict them.

A retail merchant here told me that he sold, in the year 1889, 27 cwts. of American apple rings, and last year only 2 cwts., and these he bought with a German certificate stating that the fruit was free of salt of tin. The same man told me that lately the German Government had actually examined the common American (yellow) sun-dried apples, and found them adulterated.

A friend of mine wrote to the German Reichs-Gesundheits Amt Berlin, and received the inclosed answer.

HNR. BENEKE,  
*Consular Agent.*

FLensburg, *October 30, 1894.*

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[Translation.]

In answer to your inquiry regarding apple rings (dried pippins), I may say the Prime Minister sent a circular, dated April 16, 1894, to the allied states, and it is printed by the



board of health in their annual for 1894, which is to be had of Mr. Julius Springer, Berlin, N. Menbijon Platz 3.

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WARNING AGAINST THE CONSUMPTION OF AMERICAN SLICED APPLES (APPLE RINGS).

[Translation from the publications of the Imperial Sanitary Department for 1894.]

Frequent analyses which have been recently made show that American apple rings contain a considerable quantity of zinc, which has been pronounced by medical experts as injurious to health. It is, perhaps, intentional on the part of Americans to add zinc to them in order to give them a finer white color by drying them on tin plates, or by saturating them with a diluted solution of hydrochlorate of tin. As announced by the public chemical laboratory of Dr. B. Alexander-Katz, the legal chemist, the examinations have not been completed which were authorized by the Imperial Government to be held at different places during the summer of 1894. Should it be proved sufficiently by these that the greater part of American apple rings contain demonstrable and often considerable quantities of zinc, the German manufacturers will at last be relieved of their dangerous American competition. The German wholesale merchants who deal chiefly in American apples seek to protect themselves by certificates of American chemists. It is to be hoped that in the future they will be required not to sell American apple rings which have not received a certificate of the absence of zinc from a German chemist.

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## AGRARIAN MOVEMENT IN PRUSSIA.

Thinking it possible that a full statement of the expectations in which the "granger protectionists" (*Agrarier*) of Prussia indulge has not reached Washington, I have the honor to transmit the resolutions passed by the special committee of landed proprietors in the House of Representatives, which is particularly engaged in considering the reorganization of the grain trade. These resolutions were carried in committee on the 5th and 6th of November:

(1) The present price of grain no longer covers the cost of production, so that German agriculture, which remains chiefly concerned with the growing of grain, appears to be threatened in its very existence. The principle current nowadays, based on an unlimited international exchange of products, that the price of grain must be reckoned on the basis of prices that obtain among people at the lowest stage of culture, indicates an essential interference with the evolution of our country as a cultivated people.

The degeneration and ruin of German grain production and German agriculture mean surrender of the Fatherland to its external and internal foes.

In accordance therewith, it is to the interest of the whole people that a change be quickly made.

(2) An improvement of conditions is not to be expected through individual efforts alone; but Kingdom and Empire must take proper steps without delay to subdue the present clearly seen evils, and to minimize and set aside the efforts that flow from commercial contracts made with international speculation in grains.

(3) To this end, there seems to be needed a thorough reform of the grain exchanges on the basis of actual business in real articles. International sympathetic working of the exchanges on the present scale and under present conditions is one of the chief causes of the unhappy state of grain prices to-day.

(4) Efforts to put order into international monetary values should also be supported in the same way on the ground of their importance to national agriculture, more particularly in connection with a special censorship over the acceptance of public loans offered by foreigners.

(5) The building of State granaries, and the organization of agriculture for the purpose of using the same in common, should be undertaken at the same time.

A generous, undelayed encouragement and support of small traffic lines on the part of the State must be pushed, especially by such subventions as are required, since canals and main railways are of the first importance for large movements of trade and international commerce. In this connection, the tariff system will require an entirely new arrangement, and from this point of view that commerce within the frontiers shall enjoy particular preference by comparison with the management of commerce in transit, as it has hitherto existed.

(6) Without question the abrogation of the so-called "mixed transit warehouses" for grain seems necessary, since they do not effect any improvement in national agriculture.

(7) But since, by the methods above mentioned alone, there is no reason to expect a speedy and sufficient betterment of conditions, it is the duty of the State to discover ways and means whereby prices for grain suited to the producing communities may be reached, to the end that the most important production in the country be preserved, but without damage to the true interests of the consumers.

What effect these resolutions will have on the external policy of the Empire remains to be seen. At present, the agrarian members of the Reichstag and Bundesrath are basing great hopes on the new chancellor.

CHARLES DE KAY,  
*Consul-General.*

BERLIN, *November 19, 1894.*

## AMERICAN FIREARMS IN GERMANY.

Some time ago, Mr. A. Pulvermann, of the firm of Markt & Co. (limited), of Hamburg, New York, and London, called upon me, and, in the course of conversation on the subject, drew my attention to the serious disadvantages now appertaining to the export trade to Germany of small firearms, made in the United States, when competing in this market with similar articles manufactured in Germany, Belgium, or England.

As a result of our interview, I assured Mr. Pulvermann that it would give me pleasure to invoke the aid of the Department in bringing the facts to the prompt notice of the United States manufacturers and exporters of firearms, with a view to inducing them to take such joint action in the matter as their interests demanded, and I requested him to have his firm hand me, in writing, the statements he had made to me verbally.

These written statements, in the form of a letter to me from Messrs. Markt & Co. (limited), with inclosures of copies of the German laws applicable to the question involved, and of the imperial decrees recognizing the official proof marks of Belgium and England, I inclose. Messrs. Markt & Co. (limited) have made such a clear exposition of the disadvantages to which I refer, that I consider it superfluous for me to comment upon it.

All small firearms now made in the United States, and imported here before sale, have to be taken to the German official proving establishments

and there proved, and the expense involved is generally such as to consume all natural profits, especially in the case of the cheaper articles, and to forbid our competition with such firearms in the three countries above named.

It is not for me to suggest to our manufacturers and exporters how they shall bring about an official proving establishment in our country; but I may say that, under the present conditions, something of the kind is a necessity to their sharing in the trade in small firearms of this country, and, perhaps, in that of others.

W. HENRY ROBERTSON,

*Consul.*

HAMBURG, *October 27, 1894.*

STATEMENT OF MARKT & CO. (LIMITED).

HAMBURG, *October 25, 1894.*

W. HENRY ROBERTSON, Esq., *U. S. Consul, Hamburg.*

DEAR SIR: Trading largely in American goods of all kinds, we also sell American hand firearms, but labor under great difficulties in disposing of this article in the German market for the following reasons:

Under date May 19, 1891, a law was passed by the council of the German confederacy respecting the testing of barrels and locks on hand firearms. A translation of this law, as far as it concerns the present case, please find inclosed.

This law, as you will notice, left room for foreign gun makers to establish in their own country a "proof house" under Government supervision, and to stamp their hand firearms, tested and passed by this "proof house," with such proof marks as might be agreed upon among the respective Governments, thereby insuring unmolested admittance of their manufactures into the German market.

The Belgian and English gun makers have not been slow in recognizing the advantage and the saving of trouble and expense which would accrue from having such a "proof house" in their own country, and, at their request, proof marks considered equal to the German ones, were granted to the Belgian makers on February 1, 1894, and to the English makers on June 30, 1894. Please compare the two extracts, of which we likewise inclose translation.

If the import of American hand firearms into Germany was already greatly impeded by the passing of the law referred to above, it has become still more difficult, and has even come to a complete standstill after the granting of the aforesaid facilities to Belgian and English competitors.

There seems to be no reason why equal facilities should not be granted to American gun makers if they called into life a similar "proof" institution, which would satisfy the demands of the German Government, and, no doubt, great advantages would result from it to the American gun trade.

We respectfully submit the above to your knowledge and good judgement, and should be very glad indeed if you could be induced to cooperate in the work we have pointed out, which will, if followed up, certainly be welcomed by all of your numerous citizens who are interested in the gun trade of their country.

We shall be glad to receive your views as to any steps you may think fit to take in this matter, and, holding ourselves at your disposal for any further information you may require, we are, dear sir,

Yours very respectfully,

MARKT & CO. (LIMITED).  
Per A. PULVERMANN.

## LAW FOR TESTING FIREARMS.

SECTION 1. Hand firearms of all kinds are only allowed to be kept for sale or brought into the market if their barrels and locks are tested in official testing establishments, and are stamped with the proof mark according to the prescriptions of this law.

SEC. 2. The testing consists in a shooting trial with increased charge. For testing pistols and revolvers, a single trial suffices; likewise with other hand firearms, if they are not choke-bored; the shooting trial can be limited to a single one, if the sender hands in a request to this effect. For the other arms a double shooting trial takes place, the first one with prepared unfinished barrels, the second and last one with finished barrels, with junctions for double barrels and locking parts fixed. If, on the special request of the sender, a single trial only takes place, this trial has to take place on arms in their finished state, as prescribed for the second and last trial.

SEC. 3. Barrels or locking parts, which, after the shooting trial, are found to be cracked or bent, have to be rendered unfit for use by sawing into them or by breaking them up. For arms on the barrels or locking parts of which other deficiencies spring up after a shooting trial, the latter is allowed to be repeated after the rectification of such deficiencies. Barrels or locking parts, which are found to be deficient after the repeated shooting trial, have to be rendered unfit for use by sawing into them, or by breaking them up.

SEC. 4. If an alteration is to be made in the calibers, or in the locks of firearms already tested, during or after their manufacturing process, a new shooting trial becomes necessary. For arms which according to rule, should undergo a second shooting trial, this new trial adapts itself to the state of manufacture, in which they are presented.

\* \* \* \* \*

SEC. 6. The prescriptions of this law will not be applied to hand firearms (1) which bear the stock mark (*Vorrathszeichen*); (2) which are imported from a foreign country and bear a complete foreign proof mark, which is considered equal to the domestic one; (3) which are manufactured and tested by a military administration itself or by its order, as long as an alteration in their calibers or locks has not taken place. If such an alteration does take place, a new shooting trial, as prescribed by section 4, becomes necessary, if the alteration has not been carried out and arms have not been tested by a military administration. The council of the German confederacy determines which proof marks of a foreign country may be considered equal to the inland ones.

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SEC. 9. There will be punished with a fine up to 1,000 marks, or with imprisonment up to six months, anyone who keeps for sale or brings into the market hand firearms, the barrels or locks of which are not provided with the prescribed or admitted proof marks (section 6). Besides the fine to be paid, the arms kept for sale or brought into the market contrary to law, will be confiscated, whether they belong to the condemned person or not. In case the prosecution or condemnation of a particular person can not be carried out, the above referred to confiscation can be effected independently.

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## ADMITTANCE OF FOREIGN PROOF MARKS.

In virtue of section 6 of the law of May 19, 1891, respecting the testing of barrels and locks on hand firearms, the council of the German confederacy resolved, at its session of the 25th of January, to admit as equal to the German proof marks the proof marks of the "proof house" (*Probirbank*) for hand firearms at Liege, prescribed by the royal Belgian order of the 11th of July, 1893 (*Moniteur Belge*, Nos. 203 and 204).

The council of the German confederacy having resolved, in virtue of section 6 of the law of May 19, 1891, to admit the proof marks of the Gun Makers' Company, London, and the "proof house" in Birmingham as equal to the domestic ones, the marks of the hand firearms, tested by these English establishments and admitted into Germany, are herewith published as follows: Single-barrel percussion sporting guns, etc.

## HOTEL EXHIBITION AT AMSTERDAM.

Under date of November 2, 1894, Consul Edward Downes reports to the Department that an international exhibition of "Hotel and Traveling Accommodations," under the patronage of the Queen Regent of the Netherlands, will be held on the grounds behind the "Rijksmuseum, Amsterdam, from May 1 till November 1, 1895."

The programme\* adopted by the general and executive committees gives the following information:

*Congresses and festivities.*—During the exhibition, several congresses concerning important questions about hotel and traveling life will be held, while the executive committee will promote attraction of the exhibition by arranging different festivities.

*Grounds and buildings.*—The area of the exhibition grounds is 160,000 square meters (524,933 square feet), that of the buildings, 30,000 square meters (98.43 square feet).

*Committee.*—The exhibition will be managed by a general committee, consisting of an executive committee and an assisting committee, while the executive committee is represented by a manager, acting according to given instructions.

*Way of exhibiting.*—The objects for exhibition will be arranged in groups, which are divided into classes, not regarding the nationality of the exhibitors. This latter rule, however, may be disregarded if specially requested.

*Application.*—Whoever desires to compete in this exhibition must inform the executive committee at the latest on November 15, 1894, by sending a form of application properly described and signed. Such forms are to be got at the office in Amsterdam and from the different agents here and abroad.

*Prices.*—The rent for space occupied is calculated: In the halls, 30 florins per front meter, for small spaces; for large spaces, the committee decides; in the garden and grounds (per square meter), at prices on special conditions. Special prices will be charged for buildings which require much room, as shops, cafés, places of amusement, etc., as also for private exhibitions.

*Motive power.*—The executive committee will provide motive power for the machinery on conditions to be arranged by separate rules.

*Payment.*—The payment for the rent of space, etc., is due by the exhibitor or the tenant the day when the notice of acceptance is sent to him, and must be paid at the office of the executive committee within a fortnight. No money will be paid back under any circumstances.

*Refusal of exhibits.*—The executive committee is entitled to refuse exhibits.

*Acceptance of goods.*—Exhibits will be accepted from March 15 till April 20, 1895; after that time, the committee can refuse all further exhibits, without taking any responsibility. The executive committee will indicate the place to be occupied by each exhibit. Every exhibit must be sent carriage paid, and be removed at the finish of the exhibition from the buildings at the sender's own expense, at times determined by the executive committee. Objects which are then not removed shall be stored at the sender's expense; a month after, the executive committee is entitled to sell those objects by auction, and with the sale to recover all costs.

*Carriage.*—The Dutch Railway Company grants free carriage to and fro on all goods destined for the exhibition. The Netherlands State Railway Company only grants free carriage on those goods which are returned after the exhibition. From the several foreign

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\* This programme was given to the press immediately upon its receipt at the Department.

railway companies similar facilities will be asked. Several steamship companies will be requested to charge their lowest terms for all goods destined for the exhibition.

*Customs.*—On the exhibition grounds an office for import duties will be opened in order to facilitate the customs formalities. It is intended to request the Government to grant freedom of duties.

*Insurance.*—All exhibition buildings erected for the executive committee will be insured against fire.

*General rules.*—Every exhibitor or his representative looks after the unpacking and packing of the exhibits, the arranging thereof, the keeping and cleaning during the time of the exhibition, for eventual insurance, and for everything that may be required.

If desired, the executive committee is willing to effect such insurance at the expense of the senders.

The committee undertakes the general protection, looks after the storing of empty cases, without any responsibility for any damage or loss while a charge is made for the storing of empty cases of 2 florins per square meter, with a minimum of 2 florins for any storage of smaller dimensions.

The exhibitors will look after the expedition in and through the buildings, according to the rules of the executive committee.

It is not allowed to make copies, drawings, or sketches of any exhibits on the grounds or in the buildings of the exhibition, without written permission from the owner of the said exhibits, but the executive committee is entitled to reproduce any groups or sections.

*Advertisement in the buildings.*—Without written permission of the executive committee, it is not allowed to distribute placards, prospectuses, advertisements, etc., on the grounds in or upon the buildings.

Exhibits may not be removed before the close of the exhibition.

When requested by letter, the executive committee can grant the removal, exchange, or renewal of exhibits.

The executive committee is entitled to remove any exhibits which, according to their opinion, might be dangerous, annoying, or undesirable.

*Sale.*—As soon as an object has been sold by any exhibitor, he shall give notice to the executive committee.

The object sold has to be provided with a label, on which has to be distinctly written the word "sold." Sold articles are not allowed to be removed before the close of the exhibition unless special arrangements are made.

The retail sale of all kinds of articles will be specially granted in covered streets in the center of the grounds.

About the right of sale for every agreement a special contract will be made.

Exhibitors or their representatives, by written appointment, shall have free admission to the exhibition during the hours it is opened on showing their portrait stamped by the executive committee.

All admission tickets are strictly personal; if any abuse takes place, the ticket will be at once retracted. No duplicates will be given for lost tickets. Every exhibitor is entitled to one ticket of admission.

*Awards.*—Awards will be granted by an international jury according to rules to be fixed later on. They consist of crosses of honor, gold, silver, and bronze medals (of precious metals), and certificates. They will be distributed as soon as possible—at any rate before the close of the exhibition.

*List of awards.*—Immediately after the awards are granted by the jury the official list will be prepared and distributed in large numbers by the executive committee.

*Catalogue.*—The executive committee will prepare an official catalogue containing a complete and graphic description of all articles exhibited, together with the names of the exhibitors and places of origin.

*Lottery.*—After permission obtained from the Government, a lottery to the amount of at least 250,000 guilders will be held of articles exclusively bought at the exhibition.

*Special rules.*—Special rules which might be necessary for order, protection, and the general management of affairs will always be published by placards in the buildings and on the grounds, and will thereafter be binding to all whom it may concern.

*Final article.*—The executive committee is entitled to arrange and to decide finally all questions which have been not or insufficiently described by this programme.

The executive committee is entitled to be represented by the manager in any case they might think necessary.

#### EXHIBITS.

The exhibition, which will be held in Amsterdam on the grounds behind the Rijksmuseum, and the opening of which is decided on May 1, 1895, will contain the following groups, divided into the following classes:

##### GROUP I.—ARCHITECTURE.

Class A.—Plans and furnishing of hotels.

Class B.—Plans and furnishing of cafés.

Class C.—Building materials.

Class D.—Plans and models of ships.

Class E.—Plans and models of railway construction.

##### GROUP II.—MEANS OF TRANSPORT.

###### *By land.*

Class A.—(1) Railway carriages, construction of engines; (2) Electric, steam, and horse tramways; (3) carriages, omnibuses, vans, and vehicles, moved by any other power than by horses; (4) cycles and construction thereof.

###### *By water (naval department).*

Class B.—Steamers, shipbuilding, models and drawings of ships with electric power, and models and drawings of ships with other power.

###### *Aërostatic traveling.*

Class C.—Balloons for topographical and military purposes; "*Balloons captifs.*"

##### GROUP III.—GENERAL INDUSTRY.

Class A.—Furniture for bedrooms and dining rooms.

Class B.—Furniture for drawing-rooms, smoking, conversation and reading rooms.

Class C.—Various furniture for hotels, cafés, and restaurants.

Class D.—Various furniture for mail steamers, railway carriages, etc.

Class E.—China and pottery.

Class F.—Glass.

Class G.—Table decorations.

Class H.—Knives, forks, etc.

Class I.—Kitchen utensils and ironwork.

Class J.—Household linen.

Class K.—Blankets, counterpanes, mattresses, etc.

Class L.—Various traveling articles.

Class M.—Rope works.

Class N.—Sail manufactory.

Class O.—Saddle manufactory.

Class P.—Clothing, shoes, and furs.

Class Q.—Paper manufactory.

## GROUP IV.—INDUSTRY OF ARTICLES OF FOOD.

- Class A.—Solid food and alimentary substances.
- Class B.—Prepared and preserved food.
- Class C.—Wines, liqueurs, spirits, spring, and mineral waters, etc.
- Class D.—Provisions for ships.
- Class E.—Breweries.
- Class F.—Distilleries.
- Class G.—Bakeries and confectioneries.
- Class H.—Cocoa and chocolate.
- Class I.—Ice manufactory.

## GROUP V.—RIVER AND SEA FISHERY.

- Class A.—Manufactory of nets.
- Class B.—Artificial fish-breeding establishment.

## GROUP VI.—HEALTH.

- Class A.—Closets.
- Class B.—Ventilations.
- Class C.—Lavatories.
- Class D.—Baths.
- Class E.—Disinfecting and cleaning materials.
- Class F.—Filters.
- Class G.—Water pipes.
- Class H.—Analysis of food.
- Class I.—Medicines and bandages.

## GROUP VII.—MACHINERY.

- Class A.—Machinery to produce electricity for motion and lighting.
- Class B.—Machinery to produce steam.
- Class C.—Machinery to produce hot air.
- Class D.—Machinery to produce motion by other means.
- Class E.—Lifts for persons and goods.
- Class F.—Machines for central heating.
- Class G.—Electric bells, fire signals, telephones, and telegraph.
- Class H.—Safety signals.
- Class I.—Signaling and shunting apparatus.

## GROUP VIII.—LIGHTING.

- Class A.—Lighting by electricity.
- Class B.—Lighting by gas.
- Class C.—Lighting by candles.
- Class D.—Lighting by petroleum and other means.
- Class E.—Lighting of bedrooms, dining rooms, offices, etc.
- Class F.—Lighting of drawing-rooms, halls, staircases, and large rooms.
- Class G.—Lighting of ships, railway carriages, and other traveling conveyances.
- Class H.—Apparatus for illuminating in the open air.
- Class I.—Various apparatus for lighting.

## GROUP IX.—ART INDUSTRY.

- Class A.—Carpet manufactory.
- Class B.—Delftware industry.
- Class C.—Printing and lithography, engraving, zincography, and photography.
- Class D.—Wood carving.



- Class E.—Sculpture.
- Class F.—Crystal and glass manufacture.
- Class G.—Decoration of rooms.
- Class H.—Decorative painting.
- Class I.—Weaving.
- Class J.—Spinning.
- Class K.—Wall papers.
- Class L.—Diamond working.

## GROUP X.—HEATING.

- Class A.—Stoves, hearths, and *caloriferes*.
- Class B.—Central heating by water, steam, and air.
- Class C.—Heating of bedrooms.
- Class D.—Heating of halls and large rooms.
- Class E.—Heating of mail steamers, railway carriages, and other traveling conveyances.
- Class F.—Different means of heating.
- Class G.—Coals and other fuel.

## GROUP XI.—GEOGRAPHICAL SECTION.

- Class A.—Description of traveling and places.
- Class B.—Maps and traveling guides, etc.
- Class C.—Astronomical and topographical instruments.

## GROUP XII.—COMPLETE FURNITURE.

- Class A.—Complete kitchen.
- Class B.—Complete butlers' pantry, with apparatus for cleaning utensils, and cleaning and polishing various objects.
- Class C.—Laundry.
- Class D.—Dairy.
- Class E.—Preserving of vegetables, etc.
- Class F.—Confectioners' shops.
- Class G.—Bakeries.
- Class H.—Butchers' shops.
- Class I.—Interior of various hotel rooms.
- Class J.—Interior of ship cabins.
- Class K.—Interior of railway carriages, dining cars, etc.
- Class L.—A complete printing establishment.

## GROUP XIII.—MEANS OF SAFETY.

- Class A.—Locks.
- Class B.—Fireproof safes.
- Class C.—Safety apparatus in case of fire.
- Class D.—Extinguishing apparatus.
- Class E.—Brakes.
- Class F.—Rocket apparatus.
- Class G.—Lifeboats.
- Class H.—Rescue apparatus in case of shipwreck, etc.
- Class I.—Arms.

## GROUP XIV.—GARDENING.

- Class A.—Plans and drawings of gardens.
- Class B.—Beds.
- Class C.—Ornamental flowers.

Class D.—Vegetable and fruit garden.

Class E.—Conservatory necessities.

Class F.—Decorations for house and garden.

#### GROUP XV.—INSURANCE.

Class A.—Statistics, tables, and tariffs of fire insurance.

Class B.—Statistics, tables, and tariffs of life insurance.

Class C.—Statistics of insurance against robbery and burglary.

Class D.—Statistics of insurance against bursting of pipes, etc., in the water supply.

Class E.—Statistics of accidents.

Class F.—Statistics of infectious diseases.

Class G.—Statistics of nonemployment.

Class H.—Statistics of pensions.

#### GROUP XVI.—MISCELLANEOUS.

Class A.—Tobacco, cigars, cigarettes, and smoking articles.

Class B.—Perfumery and toilet requisites.

Class C.—Articles of luxury.

Class D.—Literature.

Class E.—Illustrations.

#### EXECUTIVE COMMITTEE.

N. A. Calisch (*president*), W. Schut, A. H. Van Nierop, G. Van Mesdag, H. Warndorff, N. Le Grand, W. C. De Vos, Evert Breman, K. A. Van Der Weide, F. Fockens (*secretary*).

Evert Breman, *Architect*.

N. Le Grand, *Managing Director*.

P. A. J. M. Geselschap *Manager*.

## THE PNEUMATIC TELEGRAPHS OF PARIS.

Compressed air, which has never been utilized very extensively in the United States, finds large and steadily increasing application in Europe for various purposes. In Paris and many other continental cities, compressed air, distributed from central stations, is supplied for motive power in factories, for the generation of electricity, for the ventilation of large buildings, for operating elevators and clocks in public and private buildings, factories, stores, etc., for pumping water and other liquids, for refrigeration and cleaning, and for various other purposes. Its use as a motive power for tramways in Paris, already considerable, is extending rapidly, and the same is true of other great European cities. It is not the purpose of this report, however, to consider the many and varied uses to which compressed air is put in Europe, but only to speak of one of its most important and successful applications in Paris, viz, in the intramural transmission of correspondence.

The pneumatic-tube system, which has had such an enormous development in Paris, and has long been regarded as an indispensable adjunct of the postal and telegraph system, was originally introduced in London in

1858. It has been in successful operation in Paris, and also in Berlin since 1866, and in Vienna since 1875. It is also in use, in a more restricted way, in the cities of Lyons and Marseilles.

In Paris, it affords a cheap, speedy, and always reliable method of postal communication. It is employed not only for the communication of *cartes télégrammes* (card telegrams) originating in the city, but also for the distribution to substations, in all parts of the capital, of telegrams from the provinces and from abroad, and for the collection of telegrams at such stations for transmission from the principal bureaux to their destinations, whether in France or other countries.

The system is constantly being extended and perfected. The postal officials state that the maximum interval between the posting of a *carte télégramme* in Paris and its arrival at its destination in Paris is an hour and a half; but in practice, the time required for the transmission of *cartes télégrammes* between opposite extremities of Paris very rarely exceeds an hour. The average time is somewhat less. This system is so successful and so well adapted to the needs of the people that the use of the electric telegraph for purposes of intramural communication is comparatively small.

Mr. Ch. Bontemps, the author of an elaborate treatise entitled "*Les systèmes télégraphiques, Aériens-Electriques-Pneumatiques*," published so long ago as 1876, epitomizes the advantages of the pneumatic system thus:

The pneumatic telegraph is being substituted more and more for the electric telegraph in the transmission of dispatches exchanged between the different quarters of a city. To make electricity speak, the writing is decomposed—several successive signals make one letter, several letters one word, and, finally, several words convey the thought. These signals pass rapidly when the way is clear, but when the wire is encumbered the dispatches wait. If, in lieu of one wire, two, three or more are used, it would seem that such an accumulation could be prevented.

But it must be borne in mind that such augmentation is limited by the size of the budget of the enterprise. A telegraphic bureau works in an intermittent manner; it is impossible always to foresee the moment of a congestion. In these conditions, how shall the personnel of the service be regulated?

In this situation we find ourselves between two alternatives—either we shall have a limited number of employees, sufficient only to adequately supply the ordinary daily necessities of the service, supposing them to be uniform in extent, or we must maintain a formidable army which we can utilize at rare intervals.

The pneumatic telegraph operates in another manner. It takes all the messages at the same time and places them in a box, which is dispatched to its destination by the force of compressed air. There are no interruptions by reason of the accumulation of messages, and there are no errors in transmission. The speed depends only on the power of the machinery for the production of compressed air; a speed of 1 kilometer (0.621376 mile) per minute is easily attained.

The "pneumatic telegraph" system of Paris owes its adoption to the encumbrances of the electric wires, which, so long ago as 1860, had caused frequent delays in the transmission of messages and great inconvenience and losses to the public. For a time, in order to relieve the pressure upon the wires, especially between the central bureau of telegraphs and the bourse,

or stock exchange, where the congestions were the greatest and most numerous, it was found necessary to establish a regular system of couriers, who, in light vehicles, made trips between those two points every fifteen minutes during business hours. These couriers conveyed the latest quotations from the bourse to the central station, whence they were disseminated far and wide by the electric wires.

Returning, the couriers carried to the bourse messages sent to Paris by wire from the provinces and from abroad. This was but a temporary expedient, and was soon supplanted by a subterranean conduit from the bourse to the Grand Hotel, a distance of 700 meters (765.5 yards). This was the beginning of the pneumatic telegraphs of Paris, which now embrace a network of conduits under the city to every quarter of the great capital. The production of compressed air by the use of the municipal waterworks having succeeded, the experimental line was extended from the Grand Hotel to the central station (No. 103 rue de Grenelle St. Germain), thus affording direct pneumatic communication between the latter and the bourse.

The necessities of the service, and the importance of guarding against any possibility of an interruption in the same, led to the construction of a second line (following a different route) between the central station and the bourse, which was completed in 1867.

From that time to the present, there have been few years which have not witnessed extensions and improvements in the system.

The number of dispatches of all kinds carried during the year 1876 averaged about 250,000 monthly, or 8,300 daily, of which about 2,500 were sent from or received at the bourse. Forty-five branch stations were then in operation, and the average length of time actually occupied in the transmission of dispatches (from the deposit of the same to their delivery at their destination), was officially reported at from forty to forty-five minutes. The number of dispatches in course of transmission was the largest at the noon hour, during the session at the bourse; in the early morning hours, the tide flowed to and from the great markets, and in the evening, between the leading boulevards and avenues and the fashionable residence quarters. The total cost of construction up to 1876 was, in round figures, 1,400,000 francs (\$270,200).

To-day, the aggregate length of the pneumatic telegraphs in Paris is 251,259.13 meters (156.12 miles), classified as follows:

	Miles.
Length of lines of 65 millimeters (2.58 inches) interior diameter.....	123.2
Length of lines of 80 millimeters (3.15 inches) interior diameter.....	17.84
Subterranean passages.....	15.08
Total.....	156.12

There are 105 postal bureaux or branch post-offices in Paris, all of which, with one exception, are equipped with the pneumatic tubes. The total cost of construction to date is, approximately, 8,000,000 francs (\$1,544,000).

The number of persons employed in connection with the pneumatic service is 411, classified as follows:

Inspecting engineer.....	1
Inspectors.....	2
Draughtsman.....	1
Chief engineer.....	1
Assistant chief engineer.....	1
Foremen.....	6
Assistant engineers.....	16
Stokers.....	23
Blacksmith.....	1
Overseers.....	11
Clerks *.....	348
<b>Total.....</b>	<b>411</b>

The number of apparatuses in use is 365. The number of telegrams carried during 1893 was nearly four times the number carried in 1874, the exact figures for 1893 being:

Card telegrams (point to point in Paris):

30-centime telegram cards.....	2,297,985
60-centime answer prepaid.....	32,736
50-centime closed cards.....	1,726,362
1 franc answer prepaid.....	4,007
Pneumatic envelopes.....	36,577
<b>Total intramural.....</b>	<b>4,097,667</b>

Telegrams:

Paris for France.....	3,574,126
Paris for foreign countries.....	1,346,820
Paris from France.....	3,704,142
Paris from foreign countries.....	1,043,696
<b>Total extramural.....</b>	<b>9,668,784</b>
<b>Grand total.....</b>	<b>13,766,451</b>

It is not possible to separate the amount earned by the pneumatic system in transmitting telegrams received from or sent to other points than Paris from the earnings of the general telegraph system, which is a part of the postal system of the country.

The gross revenue from transmission of telegrams from Paris was 1,576,225.10 francs (\$304,211.44). Making no allowance for the earnings of the pneumatic system as an auxiliary to the general electric telegraph system of the country, there is a handsome surplus to the credit of the former. The total expenses of operation in 1893 were: Production of motive power, 300,000 francs (\$57,900); repairing lines and apparatus, 75,000 francs (\$14,475); personnel of operation, 590,000 francs (\$113,870); total, 965,000 francs (\$186,245). This shows a surplus of 611,225.10 francs (\$117,956.44).

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\* Chiefly engaged in transmitting and receiving telegrams through the tubes.



# DIRECTION G<sup>LE</sup> DES POSTES

## ET DES TÉLÉGRAPHES

[General Management of Posts and Telegraphs.]

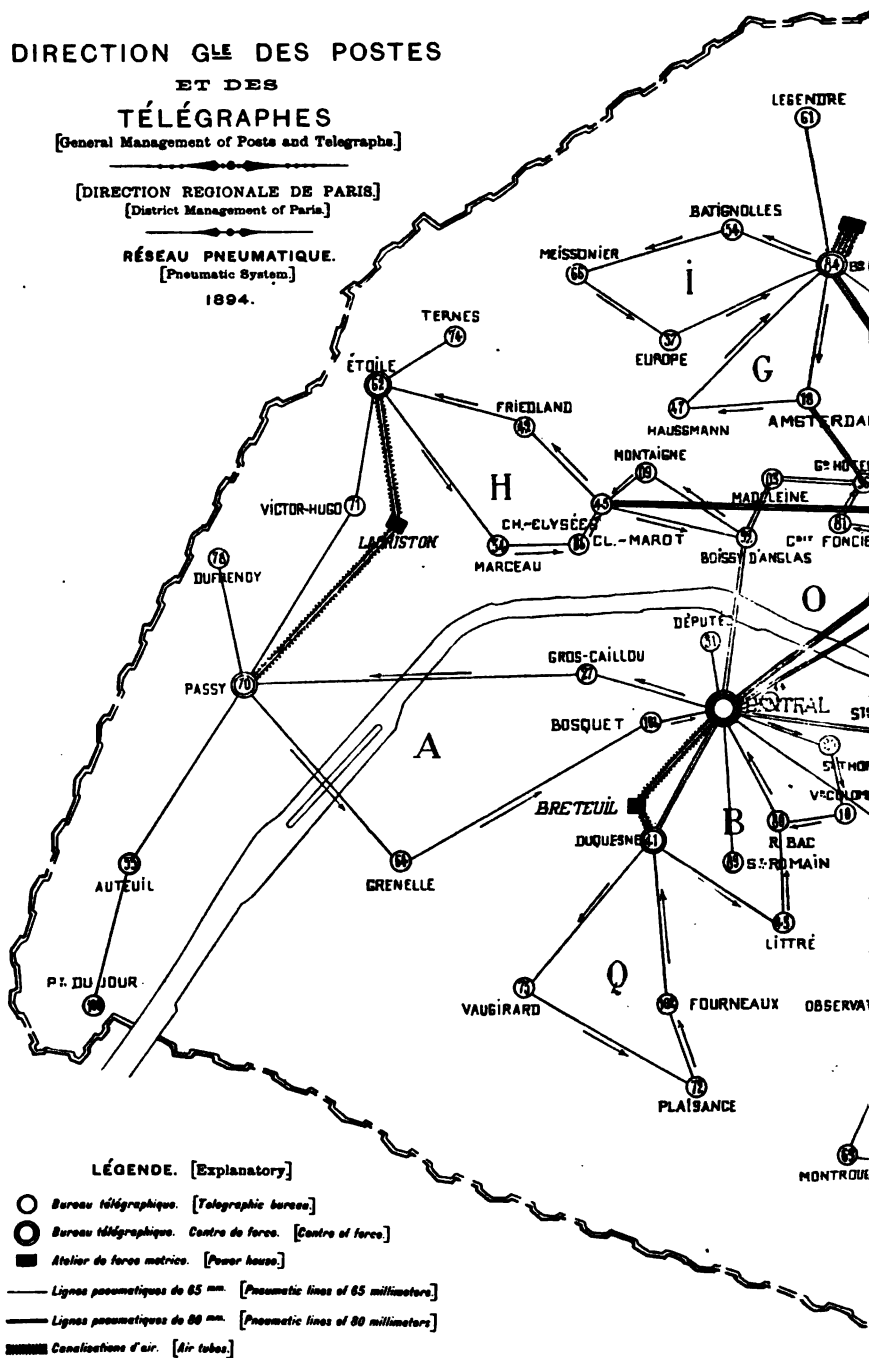
[DIRECTION REGIONALE DE PARIS.]

[District Management of Paris.]

### RÉSEAU PNEUMATIQUE.

[Pneumatic System.]

1894.









It remains to give a brief description of the system and the manner of its operation :

The accompanying map shows the ramifications of the various lines, the location of the several shops for the production of the motive power and the bureaus from which the same is distributed ; also the location of all the bureaus at which the pneumatic telegrams are received and forwarded.

The conduits through which the compressed air is conveyed from the generating works to the distributing stations are also indicated, as well as the principal lines of 80 millimeters (3.15 inches) in diameter, and the collateral lines of 65 millimeters (2.56 inches) in diameter.

The general system is largely composed of a series of secondary systems of polygonal form, with several branch lines from points in these secondary systems to stations which could not conveniently be embraced therein.

Originally, the entire service was made over the polygonal systems, but some of the important stations are now connected, as indicated on the map, by air lines of 80 millimeters (3.15 inches) in diameter, through which an "express service" is maintained. There are no intermediate stations on these lines, which serve only the terminal stations.

#### THE TUBES.

The lines are composed of soldered iron tubes. The sections are connected by joints and bolts. The interior diameter of the tubes is from 65 millimeters (2.56 inches) up to 80 millimeters (3.15 inches). The curved sections vary from 10 to 50 meters (32 feet 10 inches to 164 feet) in length. The proportion of curves to the straight portions is about 1 to 7. The tubes are sunk in the earth at an average depth of one meter (39.37 inches) with very slight inclines, save at the entrances to the stations, where special provision is made for the arrival and departure of the trains. Upon reaching the foundation of the stations, the line abruptly rises with a curve of 2 to 6 meters (6 feet 6 inches to 19 feet 10 inches) in length, and extends vertically to the receiving and dispatching apparatus.

Whenever possible, the sewer galleries are utilized. The tubes are supported along the walls by hooks suspended at intervals of from 2.5 meters to 3 meters (8 feet 2 inches to 9 feet 9 inches). Repairs are facilitated by this arrangement, by which means the lines are always of easy access. The sewers do not generally admit of curves sufficient for the passage of the cars. In these cases the tubes are carried out of the galleries at convenient points for short distances. The tubes generally follow the slope of the ground ; when it is necessary to pass from the earthen trench to a sewer, the trench is gradually deepened to modify the slope as much as possible.

It frequently happens at the lowest points of the line that there occurs an accumulation of water which might impede the march of the cars, or at least soil their contents. This accumulation is caused by condensation of the vapor in the motive air as it emerges from the reservoirs. If the air pipe is at a lower temperature than the dispatching office, a moisture is formed

therein which causes the interior surface to oxidize, and produces, with the rust, a yellowish substance which settles on the boxes. It is principally in winter, or when the air is very damp, that this occurs. Various remedies are employed to counteract this. The air which feeds the reservoirs is taken, when possible, from a cool and relatively dry place. Purifiers, such as are used in the canalization of gas, are also applied at the lowest parts of the lines.

#### VEHICLES.

The size and number of dispatches fix the dimensions of the line. Envelopes capable of inclosing (folded in four) the telegram form, are used. The boxes in use are cylindrical in form, made of strong sheet iron, with an exterior leathern covering. These boxes will contain from 30 to 35 messages each. A train is formed by placing several boxes, one after the other, inside the tube. A piston, composed of a hollow iron cone, bearing at its summit a leather shield, cut out into sectors, transmits to the boxes the pressure of the compressed air. The leather coverings are worn out, as a rule, and renewed after traveling 2,000 kilometers (1,243 miles). The sheet-iron boxes are scooped out, and are thick enough to be proof against the effects of all collisions. They last an indefinite period. The weight of the leather is 64 grams (2.26 ounces), and that of the sheet iron 182 grams (5.85 ounces).

The pistons are also made of sheet iron and are hollow. The interior of the cone is fitted with a wooden mandrel, having a long rod screwed on at its end. This screw holds the nut which fastens the plate, which, in turn, serves to hold the flange. This arrangement prevents the various pieces which compose the piston from separating while it is in motion. The weight of the piston is 565 grams (18.164 ounces). A train composed of ten boxes and a piston has a maximum weight of 4 kilograms, 115 grams (8.12 pounds).

Each box has a number, which is stamped both on the leather covering and on the sheet iron which serves to fit them together.

One very important point is that there should be sufficient adhesion to prevent the box from separating when in motion, and at the same time that the opening by hand remains tolerably easy. This detail has an enormous importance. The stoppages which occurred in the early workings of the system were always caused by want of adhesion of the coverings. It is customary also to change the boxes two or three times a day while on the circuit; this precaution reduces the wear and tear.

The name of each office or of each circuit is engraved on the base of the metallic coverings, and this enables the distributing clerks to sort rapidly.

Finally, at each station, there is a caliber for verifying the diameter of the boxes put in use. Stoppages may occur through letting a box go out which is a fraction too large.

## PRODUCTION OF COMPRESSED AIR.

To the invention by Hero, about one hundred and twenty years before the Christian era, of the fountain which bears his name, we owe the method of compression of the air which has given birth to pneumatic telegraphy. This fountain, which is to be found in all chemical laboratories, is too generally known to demand any description here. The principle is simply to force, by the introduction of water, the air in a receptacle to escape and join the air in another receptacle. Air added to air in a close vessel is compressed air, which acts in the manner of a spring.

For a number of years, the water power provided by the immense reservoirs connected with the waterworks of Paris, and situated on the high grounds about the city, was utilized for the production of compressed air. Gradually, however, the use of steam power was substituted, and it is now used exclusively.

The following shows the installation at the seven power houses, and indicates the extent of the lines served from each:

*Production of motive power.*

Work shops.	Available horse-power.	Length of lines in use.		Length of service.
		80 millimeter tubes.*	65 millimeter tubes.*	
		<i>Yards.</i>	<i>Yards.</i>	
General post-office.....	100	21,675	27,337	Permanent.
St. Sabin.....	180		47,504	From 6 a. m. to 9 p. m.
Breteuil.....	90	6,643	37,366	From 6 a. m. to 11 p. m.
Poliveau.....	60		29,464	From 6 a. m. to 9 p. m.
Pajol.....	60		29,170	Do.
Forest.....	30	2,765	13,647	Do.
Lauriston.....	60		27,029	Do.
<b>Total.....</b>		<b>31,083</b>	<b>211,517</b>	

\* 80 millimeters = 3.15 inches; 65 millimeters = 2.56 inches.

## DISPATCHING AND RECEIVING APPARATUS.

This is, in fact, the "station" or office of the line. It is simply a continuation of the tube, with a receptacle at a short distance from the terminus. Above this receptacle are two distinct tubes, one extending to the compressed air reservoir, the other for the purpose of letting off the air. These are controlled by a lever, which acts on two taps, so disposed that the same movement of the lever shuts one and opens the other, and *vice versa*. They establish communication between the line and the air, either for the reception or dispatch of the train.

To receive the train the tap is opened so as to let off the air forced forward during its movement. The train strikes against the end of the tube and redescends. Meanwhile, a fork is placed by one of the officials so that the train is stopped at the receptacle now open. The piston is first withdrawn and then the different boxes.

In dispatching the trains, the boxes are successively placed in the receptacle. Their weight sends them down, and the train is completed by the addition of the piston. The compressed air tap is opened, and the air acting on the piston, drives the train on to its destination.

This description of a vertically equipped station will serve equally for one in which there is space for the train to arrive horizontally, the only difference being a spring buffer at the terminal point.

#### GENERAL WORKING DETAILS.

At the central station, the electrical apparatus unceasingly bring in telegrams from all parts of the world. A clerk folds the paper and places it in an envelope which faithfully repeats the name of the addressee.

At 8 in the morning, work begins. The boxes are ready, a list accompanies the packet for each station, the tube is there, a puff of air and the first train is off; the circuits begin on the closed polygons; the trains run in each direction, alternating every three months. This avoids the obstruction of the tube by preventing the deposits of leather dust, or of rust. In winter the boxes always arrive wetter than in summer. The air supplied to the tubes and proceeding from the stations becoming heated deposits the water, with which it is saturated, when it passes into the underground passages, which are at a lower temperature. This is obviated as much as possible by fixing the reservoirs and the air feeders in the cellars.

Let us follow the train starting from the central station and arriving at station 8 with a jerky noise. We find in front a box containing the telegrams for distribution in the territory served by station 8, and those destined for stations 6, 7, 10, and 9. We exchange this box for another containing the telegrams received at 8, or at 6, 7, 10, and 9, which the preceding train on the "G" circuit had brought, and we start the train completed on to 8, and 11, which continues its route continually renewing itself.

In order to make the distribution systematically, there is affixed to the telegrams a number of a distinct daily series for each station. Paris tradespeople supply for this purpose a series of stamps with distinguishing designs which have fully answered the purpose.

The organization of the service is conducted by means of report sheets, detailing for each train its actual hours of arrival and departure, which are compared with the official time table.

Another example: At 9.35 a. m. a telegram is handed in at station 10, for a person living in the district served by station 18. This telegram starts by train No. 7 (which leaves the central station at 9.30); leaving station 10 at 9.40, the box omnibus of the "G" circuit drops it at station 8 at 9.44. Train number 8 takes it at 9.47½ in the box omnibus of the "P" circuit, and it arrives at 9.51½ at station 12. There we see it pass into the box omnibus of "D" circuit and arrive at station 18 at 9.54; in 15 minutes more it will be delivered at the house, so that its transmission will have occupied thirty-four minutes.

## ACCIDENTS AND OBSTRUCTIONS.

When a train, for any cause, is stopped in the tube, the accident proceeds either from a disturbance in the line, in the train, or boxes, or in the station apparatus. Those occurring in the machines or apparatus are promptly repaired by the engineers, and the train is never long in distress. If the repairs can not be immediately made the corresponding station can, by blowing into the tube, send back the boxes to the starting station. The shield attached to the piston turns back when the direction of the pressure changes and a new piston is inserted by the station which "backs," goes on, joins the train and carries it back to its starting point. In the case of damage to the wagons or to the line, the difficulties are of another kind. The first attempt is to increase as much as possible the pressure acting on the train. This often releases it; this failing, nothing remains but to make a search for the obstruction. Experiments made at the starting station indicate approximately the location of the accident; the variations in the pressure of the air in the station reservoirs when in communication with a line of known length, and successively with the portion of the obstructed line are observed. In accordance with the Mariotte law, the spot to be reached can be indicated within 30 meters (32.88 yards). A pointed rod may also be used to a pretty good length (55 to 66 yards) on either side of the opening made by taking up one of the tubes. When the tubes are fixed in the sewer galleries the question becomes quite simple, as the line is then of easy access.

A few other causes of interruption may be mentioned:

(1) Omission to adjust the piston. The air, acting directly on the boxes, penetrates between the coverings, and the boxes are no longer set together; they arrive separately, one after the other, most of them open, and the telegrams all in disorder.

(2) Forgetting a train. This seems almost impossible, but this has happened. By an oversight, the official had signaled the reception before the arrival of the train. When the following train arrived, it pushed the first on and took its place. At the next station the second was mistaken for the first, so that for a good part of the day other trains came instead of the ones expected, till the verification of the waybills revealed this singular error.

Other accidents have occurred through the mains becoming frozen. The remedy was simple. Several pistons were filled with hot water and started after the first. They established a thaw and pushed the train on to the next station, icicles and all. Now and then a blow from a pick during the laying down of gas and water mains, etc., may flatten or pierce the tube. Escapes of air, which might be thought to be of frequent occurrence, have, on the contrary, never happened.

## TRAFFIC DURING AN OBSTRUCTION.

While using every effort to recover the telegrams delayed by the accidents, it is important not to delay the subsequent trains. The following

arrangements are made: A van service is at once established, starting every fifteen minutes, and carrying the train from one station to the next station over the obstruction. This is the best solution when the delay lasts less than four hours. Should the delay continue, the polygonal circuit enables a change to be made from a circular route to an alternate return journey. Of course, the use of telegraphic signaling becomes necessary for the conduct of a double-journey service on one line, so as to prevent collisions and insure regularity.

#### CONTEMPLATED IMPROVEMENTS.

Extensive improvements and enlargement of the system, the construction of which will extend over several years, are now under consideration, and will, no doubt, be carried out. These include among other things:

(1) The development of the system of direct lines of large diameter, by which all the most important telegraphic bureaux will be brought into immediate connection with the central station and the bourse.

(2) The amplification of the secondary polygonal systems by reducing the number of stations on each of them and the creation of new systems.

(3) The transformation of a number of power houses in order to increase the supply of motive power to meet the always growing necessities of the service. These power houses were formerly in the hands of contractors; they are now carried on by the Department of Posts and Telegraphs, and the results are more satisfactory than under the old arrangement.

A project has been formulated, and is now under study by the French Government, for the substitution of electricity for compressed air as a motive power. This project, which would involve an enormous outlay, contemplates the construction of a system of very small gauge railways, laid underground in tubes, to be operated by electricity. It is improbable that this project will be adopted in the near future, if at all. The present system is operated very successfully, and with great economy. There is much difference of opinion among engineers as to whether better results would be obtained from tubular electric railways, while there is a strong and growing opposition to the indefinite multiplication of underground electric currents. When the improvements about to be undertaken are completed, and the facilities for the production of compressed air are made adequate to the wants of the service, the pneumatic telegraphs will hardly be abandoned for any other system by this generation, or even by the next.

The expense of pneumatic telegrams is very much less than that of electric telegrams in the United States.

The length of a message is only limited by the amount of space allowed on the *cartes télégrammes*, a full set of which I attach to this report.\* The sealed telegrams, which cost 50 centimes (9.65 cents), will contain quite a long message, which is not exposed to the danger of mistake in transmission or to public scrutiny, and, as a general rule, reaches its destination almost as quickly as an electrical telegram.

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\* Transmitted to the Postmaster-General.

Of the advantages which this system presents for large cities, such as New York, Chicago, Philadelphia, St. Louis, etc., there can, I think, be no question.

In the cities of Lyons and Marseilles, which correspond in size pretty closely to Cincinnati and Pittsburg, the pneumatic telegraphs, which now connect only the central station and the most important telegraphic bureaus, are to be extended to cover the entire cities, a fact which is of no little significance.

#### ACKNOWLEDGMENTS.

For valuable information contained in this report, and for courtesies extended me in the course of its preparation, I desire to express my acknowledgments to M. Lourties, Minister of Commerce and of Posts and Telegraphs; M. de Selves, commander of the Legion of Honor, director-general of the posts and telegraphs; M. Raymond, officer of the Legion of Honor, administrator at the Ministry of Posts and Telegraphs; M. O. Amiot, director and engineer at the telegraphic division at the Ministry of Posts and Telegraphs; and to Messrs. Vassbender, Shelignean, Vasseur, Escoffen, and Victor Belugon, engineers at the Ministry of Posts and Telegraphs.

SAMUEL E. MORSS,

*Consul-General.*

PARIS, *November 20, 1894.*

### THE SUGAR INDUSTRY OF CUBA.\*

I have the honor to inclose printed copies, with translation, of the exposition adopted by the sugar manufacturers and cane planters of the island of Cuba, at a general meeting held in the city of Habana, on the 30th of November, 1894, for presentation to the Spanish Parliament, in petition of measures which they consider urgently indispensable for the preservation of the sugar industry of this island from the ruin which, they allege, now threatens it. This exposition, in consideration of the high respectability of the body of men from which it emanates, is worthy of the most serious consideration.

As a matter of historic interest, particularly to the past, present, and future relation of the markets of the United States to the permanent welfare of the sugar islands of the West Indies, I also transmit an extract from a similar exposition presented to the British Parliament by the sugar planters of the British West Indies and the merchants of London trading therewith, in the year 1784, or, say, one hundred years ago.

RAMON O. WILLIAMS,

*Consul-General.*

HABANA, *December 11, 1894.*

\* See, also, CONSULAR REPORTS No. 169 (October, 1894), p. 248 ("Sugar Interests of Cuba"), and No. 167 (August, 1894), p. 632 ("Economic Condition of Cuba").



## I.—CABLEGRAM TO THE MINISTER FOR THE COLONIES.

Upon the adjournment of the meeting of the Cuban sugar manufacturers and growers, and by general accord, says the *El Diario de la Marina*, of Habana, of December 2, the director of the board, accompanied by nearly all those who had attended the meeting, presented themselves to the governor-general, who, upon their request, offered to transmit the telegram, with his approval, to the Minister for the Colonies, the same being as follows:

MINISTER OF THE COLONIES, *Madrid*:

Sugar manufacturers and cane growers, assembled in mass meeting, petition Your Excellency for the immediate suppression of the manufacturing tax, together with the loading duty, on sugar and molasses, because of their burdensomeness on production, and without prejudice to the definitive resolution of the Parliament upon the petition for reforms contained in the exposition adopted, which are indispensable to the life of this country.

## 2.—CUBAN EXPOSITION.

EXPOSITION PRESENTED TO THE SPANISH PARLIAMENT BY THE SUGAR MANUFACTURERS AND CANE PLANTERS OF THE ISLAND OF CUBA, SEPTEMBER 30, 1894.

*To the Parliament of Spain:*

The Board of Planters and Agriculturists of the island of Cuba, and, in its name, the subscriber, by order of the directors, sanctioned in general meeting, appeal to the legislative power to represent the insupportable situation through which the sugar industry of this island is now passing, and to recommend the measures which the owners of the central factories and the cane growers consider as indispensable and urgent for the prevention of the imminent ruin now threatening them.

The wealth of Cuba, which was created by the labor of its inhabitants, is now disappearing as the logical effect of enormous economic errors, and is fast being relegated to the regions of past history.

The allusion to the balance of trade and to the increase in the collection of <sup>51</sup>the tax on the consumption of liquors made in the preamble of a budget presented recently in Parliament for this island, as signs of its increasing wealth, is deceptive and misleading, and must be taken only as the misconception of a superficial observer, poised on a distant standpoint, and ignorant of the real conditions of this country. The proceeds springing from the increase of the exports of this island disappear through numerous outlets, without returning to it in any beneficial form. The increase of the import duties, and the transfers of real estate, forced by the scarcity of pecuniary means, will explain the said increase in the collection of those taxes, while they reflect at the same time the poverty of the people, because the owner, in the most of those cases, has been forced by necessity to mortgage or to sell the homestead that he has acquired by labor and saving, despite his love for family and hearth. And as regards the increase of the consumption of spiritous liquors, this only proves the increase of vice, brought on, not seldom, by business ruin.

A dreadful future is that which awaits the sugar industry of Cuba. The island, unprovided with circulating capital, because of its surplus having been spent in the purchase and installation of the most modern improvements in sugar machinery, made necessary for contending against the competition of other countries, without institutions of credit of any kind in condition to grant timely loans, even at usurious rates, the Cuban planter can not otherwise than look on his fields with distress, ignoring how he is going to make his crop, because knowing beforehand that it will end in ruinous loss—all the elements of destruction having seemingly stacked themselves against him.

Again, upon the derogation of the reciprocity treaty with the United States, the monstrous tariff of the year 1892 was unmercifully renewed and applied to the imports from all foreign countries—one of its first effects having been to increase the price of provisions im-

ported from the United States, thereby raising the expense of living on this people, besides increasing the cost, almost to the point of prohibition, of the importation of machinery and other products of foreign countries, essential to the preservation and development of its industries, the effects of which are shown in the increased cost of production and in the abandonment of necessary repairs.

The tax imposed on the manufacture of sugar as a partial compensation for the reduction created in the revenues from customs by the reciprocity treaty with the United States still subsists.

The loading tonnage dues, which is but the hypocritical mask for an export duty on sugar, has been again revived.

The law of the 20th of July, 1882, sarcastically called the "law of commercial relations," is still maintained.

And for the completion of the portrayal of the dismal future of the sugar industry of the island of Cuba, an enormous excess in the beet-sugar crop of Europe has arisen to depress prices to a level so low as to be in disproportion to the cost of production.

But little foresight is needed to foretell, under these circumstances, the abandonment, within a short time, of the great central sugar factories, created in this island by main effort and innumerable sacrifices.

In vain have the producing classes of this island once and again raised their voices to the National Government, pointing out the remedies that might diminish, if not entirely extirpate, the causes of the present unsustainable situation. But instead of these just complaints having been attended to by the adoption of measures of relief, new and greater burdens have been imposed in the form of new exactions, as though special pains were being taken to test the humility of the complainants, and as if this colony were a part of the national territory only with respect to obligations and not with respect to rights.

The problems of Cuba are about to be the subject of ample discussion in both houses of the National Parliament. The Board of Planters, therefore, avails itself of the opportunity to insist on the adoption of the economic reforms so much needed by this island.

The law of the 20th of July, 1882, can not be longer maintained. It has already done harm enough. As the outcome of an economic error, or of a clever plot for the favoring of the few at the expense of the many, it is looked upon by these inhabitants as a measure destructive of their industries, and as having been imposed for the special benefit of the agricultural, manufacturing, and navigation interests of the peninsula, which in no wise can render a reciprocal favor to the general interests of Cuba. It is a law that must, if not sooner repealed, end in the total destruction of the commerce of this island. All mercantile relations presuppose the idea of a complete and just reciprocity between buyer and seller, and conversely between seller and buyer. But it is a manifest fact that Spain can not, for many years to come, find herself in a condition to buy the exports of Cuba and furnish her in return the imports required by the every-day life and industries of its people.

It being therefore impossible for Cuba to send her exports to Spain, either because of the insufficiency of that market to consume them, or because of their exclusion by the excessive import duties there ruling, Cuba must from necessity send her exports to a foreign market; and, again, Spain, not producing such articles as are required for the consumption of the people of Cuba, the latter have to bring them from other countries, despite their high cost induced by the exaggerated duties imposed here on imports from foreign countries for the special protection of those aforesaid agricultural, manufacturing, and navigation interests of the mother country. Such is the so-called "law of commercial relations"—all the benefit for the one party and all the detriment for the other. The continuation of a trade so contrary to the interests of Cuba is tantamount to the decreeing of her destruction, and of launching her on a road leading to the most deplorable of consequences.

As a direct result of this system, the expenses of the daily maintenance of the Cuban people and of the raw materials entering into their industries have increased; and, as a further consequence, the cost of production of Cuban exports, such as sugar, molasses, rum,

tobacco, cigars, etc., has risen apace, thereby abating the competitive power of Cuba in the consuming markets of the world against similar products of other countries. Furthermore, the nationalization of the products of foreign countries in Spain, and their allowance to enter the ports of Cuba free of duties, on an equality with the genuine products of Spain, gives encouragement to smuggling there and to fraud on the revenues here. Such a mockery starts a new train of evils, because the customs are thereby reduced, and the Government, for want of revenues, and always following the wrong road, attempts to cover the resulting deficits by the raising of new loans and by the increasing of the taxes, which augments the already insupportable burdens of the Cuban producer and accelerates, at the same time, the stream of coin flowing out of the country. So long as this system is continued, it will be impossible to reform the tariff to the degree of justice requisite for the harmonizing of a large budget with the interests of Cuba.

The present Cuban tariff needs profound revision. It neither responds to the welfare of Cuba, nor to the necessities of the public treasury; it incarnates a spirit of hostility to everything contributing to the help of the producer and of the inhabitants of this island. All imports from foreign countries are so overcharged with duties that commerce with them is almost impossible; the cultivators of the soil and the sugar manufacturers have either to pay for them in exaggerated disproportion to their value in the countries of their production or do without them. In the first case, the sacrifice is immense and often fruitless, and, in the second, the abandonment of cultivation of the sugar cane and the stoppage of the central factories is initiated, and so the revenues are injured to an alarming extent by the corresponding diminishment of imports.

The tariff offered some compensation so long as the reciprocity treaty with the United States was in operation—from the reduction of its duties on imports here from the United States; but upon the cessation of this treaty, these duties have been reimposed to the full extent of all their enormous rigor, carrying within their monstrous and insupportable exactions the death-blow of all the industries of Cuba, and particularly that of sugar.

Near the coasts of Cuba there arises the great republic of North America; its already immense and still increasing market is almost the only one that consumes the sugar production of this island. Within its vast territory all the articles of commercial exchange needed for the prosperity of Cuba are raised or produced. As a consequence, close commercial relations must be necessarily established between Cuba and the United States. To pretend otherwise is to ignore the force of that economic law springing out of the proximity of buyer to seller and of seller to buyer, determined, as in the present case, by Nature herself, in fixing the geographical positions and climatic conditions of the two countries. The great interests of Cuba therefore demand that the Government must change the policy of charging the highest rates of duties on American products, because a tariff war with the United States might end in the immediate ruin of this island, from the impossibility of exporting its products to that market. The Government must commence tariff reform at once, charging all foreign productions alike, with reasonable protection to the products of the mother country.

The constant annual deficits with which each fiscal year closes, beginning from about the year 1882, have been the cause of periodic conversions of the public debt, which, in time, have necessitated the imposition of greater taxes for the payment of interest, partial redemptions, and expenses of conversion. This involves a positive loss to the country, because the holders of the debt live abroad. Thus, the sap of the country is disappearing, and, as it were, the salt is losing its savor, and the agony of an economic death is fast approaching.

Of the total sums of the exports of the island, only a part is employed in paying for the imports brought from foreign countries; the rest migrates, never to return, and the island receives nothing for it in exchange. This cause explains the scarcity of the means and the state of bankruptcy in which Cuba lives, notwithstanding her increased exports. Among every civilized people, the greater part of production is consumed by the inhabitants in the enlargement of their industries, in the creation and accumulation of new capital; in Cuba nothing remains of her production, and instead of new capital only new debts are created. So long as this situation lasts, circulating capital will diminish, the value of real estate will

decline, and the rates of interest will rise. This scarcity of money has been aggravated by the exportation of Spanish coin, both from Cuba and Spain, for recoinage at the mints of foreign countries. This explains the reason for the Government allowing the circulation of French coin in this island on an equality with Spanish coin of the same denomination. But neither the Spanish nor the French coins serve as international money in America, because of their cost of transportation and difficulty of circulation. The solution of these inconveniences might be found in permitting the circulation of American gold of the same denomination granted to French gold.

The withdrawal of the Spanish Bank bills of the series called the "war issue," realized in the aimless manner serving always as the rule when treating of the affairs of this island, has brought on the great importation, with large discount, of silver now circulating. The inconveniences of this money might be remedied by limiting its circulation at par with gold to amounts less than \$5.

The island of Cuba has a budget of public expenses out of accordance with its real circumstances. Being poor and in need, it is made to live and spend like a rich and prodigal country. The deficits with which the budgets are balanced each year go to show that the real conditions of the country are unknown to those who govern it, and make a radical retrenchment necessary in the expenses of government, together with a thorough economic reorganization, or it must be overtaken by a complete and shameful bankruptcy. Again, nearly one-half the annual revenues of the treasury which are spent in the payment of the interest and partial redemption of the public debt, might be diminished by means of an agreement with the creditors, based on lower rates of interest and on longer terms of payment.

The tax on the manufacture of sugar, imposed because of the negotiation of the reciprocity treaty with the United States, and against which the manufacturers have protested, and still protest, should be abolished at once. The same should be done with the loading tonnage dues on each ton of sugar exported, because constituting an unjust burden, particularly in view of the great excess of beet sugar in Europe.

The result of the inquiry undertaken by the Board of Planters and Agriculturalists in the present year (1894), and published in pamphlet form, a copy of which accompanies this exposition, contains all the data and details necessary for the corroboration of the present statements.

And as conclusions founded on that inquiry and on this exposition, the Board of Planters and Agriculturalists formulate the following petitions as necessitated by the sugar industry of the island of Cuba:

(1) The repeal of the law of commercial relations of the year 1882.

(2) The modification of the tariff in accordance with the following bases: (a) There will be but one column or rate of duties for foreign countries, without granting any preference at present to any of them. With the sole exception of coal, everything imported into the country will be subject to customs duties, either from foreign countries or from national ports; (b) for the collection of import duties, a tariff of two columns or rates will be formed. In the first column will be fixed the duties to be paid by the products of the peninsula, imported direct from peninsular ports. The rates of the second column will be applied for the collection of the duties on merchandise from all foreign countries, the rates of duty of this second column not to exceed in any case 40 per cent of the rates fixed in the first column on peninsular products; (c) in whatever system may be adopted for the imposition of duties, endeavors will be made, first, that their collection produce the largest possible amount of revenue, but without making them too high, and to prevent fraud and smuggling from defeating the object of the tariff which is that of raising the revenue for the support of Government, and second, that the tariff valuations be in harmony with the current market prices of the merchandise in the countries of production, whether the duties be ad valorem or specific. This precaution should be observed principally with articles of prime necessity, especially with such as are materials for Cuban manufacturers. On this class of imports, only a minimum of duties will be imposed; (d) rules will be adopted for the modification from time to time of the classification and valuation of imports. And as a fundamental principle, as well in the formation of the tariff, as

in the reforms that may be made, the tendency will be observed of making the duties on imports exclusively for revenue, whenever the state of the Cuban treasury will permit it; (e) all export duties will be abolished; (f) as the basis of the commercial relations of this colony and the mother country, the same rates of duties will be fixed on the Cuban products in the ports of the mother country as those fixed on the products of the latter in the ports of Cuba.

(3) A new settlement of the public debt should be made in accord with the holders, reducing interest and deferring redemption.

(4) No new loans nor commissions should be made but for the purpose of really lessening the burden of the public debt.

(5) To avoid the imposition of direct taxes, for these, from the absence of correct statistics, are really taxes on capital.

(6) That the gold coin of the United States be admitted as a legal tender, giving the eagle the value of \$11, which is its intrinsic value plus the premium of 6 per cent with which the French and Spanish gold coins circulate in Cuba. And that silver money be not admitted at par with gold, except for sums less than \$5.

(7) That the tax on the manufacture of sugar and the loading tonnage duty be immediately abolished.

Such are the measures that the Board of Planters and Agriculturalists submits to the consideration of the Parliament of the Kingdom, in the hope—God granting it may not end in another disappointment—that so high and respectable a body will hear these well-founded complaints and apply, with the haste imposed by the urgency of the case, the remedies needed to extricate the sugar manufacturers and cane planters from the evils they now suffer, for they can not and must not entertain the disconsolate idea that the mother country will oblige them to abandon their factories and fields, forcing therewith so many people upon the road of hunger and desperation. No, no, it can not be possible that the anguished cry of the Cuban agriculturalist and manufacturer, who ask only to be allowed to live, and aspire solely to the removal of conditions that are killing, be spurned and buried in the grave of indifference and hostility. This land is also Spanish; its sources of wealth should not be stopped. Justice and patriotism alike demand that what has been created amid so many obstacles and privations to the glory and welfare of the common country, shall not be destroyed, and that the same common country must and shall protect all its children with equal love and justice.

### 3.—BRITISH WEST INDIES EXPOSITION.

EXPOSITION PRESENTED TO THE BRITISH PARLIAMENT BY THE SUGAR PLANTERS OF THE BRITISH WEST INDIES AND MERCHANTS OF LONDON TRADING THERETO, 1784.\*

Soon after the meeting of Parliament, a petition of the proprietors of landed estates in His Majesty's sugar colonies and of the merchants of London trading thereto, and other persons interested therein, was presented to the House of Commons. This petition sets forth that the petitioners or their ancestors have invested their fortunes in the settlement, cultivation, and commerce of the said colonies, to the extent, upon the most moderate computation, of more than £50,000,000; whereby the said colonies and the commerce thereon dependent have become the most considerable source of navigation and national wealth which Great Britain possesses out of the limits of the mother country, and that while the said colonies, as well directly as through the medium of other dependent branches of trade afford a market for British commodities, to a very great amount, and constant employment for more than 100,000 tons of shipping in the direct intercourse between Great Britain and the said colonies, while the clear income of the estates in the said colonies, after defraying the expenses of those who are resident there, is almost entirely spent in the mother country; wherefore the petitioners conceive that no part of the national property can be more beneficially employed for the

\* From Anderson's "History of Commerce" (vol. 6), printed in Dublin in 1790.

public than theirs, nor any interests better entitled to the protection of the legislature, and that the disasters and expenses of the late war, coinciding with many natural calamities, and with the effect of the heavy increase of duties imposed upon the staple articles of their produce, have reduced the petitioners to great distress and difficulty, and endanger their ability, without relief from Parliament, to carry on the cultivation of said islands; which failing, the navigation and all the other subordinate interests and advantages dependent on the cultivation must fail with it, and that the said sugar colonies can not produce any quantity of provisions at all adequate to their wants without misapplying thereto that culture which the public good requires to be appropriated to those articles of commerce which that climate alone produces, and that Barbados and the Leeward Islands do not afford any supply of lumber whatever.

The petition also states that the said sugar colonies never have been, and to the perfect conviction of the petitioners never can be, supplied so as to steadily support the culture thereof with lumber and provisions from any other country but those which form the United States of America; seeing that the gulf and river of St. Lawrence are frozen up half the year, and that the open half includes the hurricane months in the West Indies, and that the want of inhabitants, and the rigor of the climate, as well in Nova Scotia as in Canada, frustrate all just expectation of those colonies becoming speedily, if ever, productive, to any considerable degree, of those articles of which the West Indies stand in need, and that the said sugar colonies never have paid, and to the perfect conviction of the petitioners never can pay, for such lumber and provisions, but by that part of their produce which, being superfluous to Great Britain, has never found a market therein, consisting chiefly of rum, of which the dominions now forming the United States used, in time of peace, to consume a greater quantity than Great Britain and Ireland did, even before the consumption into Great Britain was discouraged by the heavy duties imposed thereon, to the equal detriment of the revenue and of the interest of the petitioners, and this superfluous produce, if not consumed in Great Britain or the dominions of the United States must be lost, seeing the consumption of the additional inhabitants which Canada and Nova Scotia may acquire, can amount to a mere trifle. Thus the value of the supplies which this superfluous produce ought to pay for would become a drain of so much cash from the mother country, as must, in payment for such lumber and provisions be drawn out of (what would otherwise rest in Great Britain) the value of the remaining produce of the sugar colonies sold there, and which would be paid, through the medium of America, to the French and other foreign sugar colonies, for supplies similar to those which we should thus, in the first instance, throw away.

It also sets forth that the intercourse naturally arising out of these mutual wants of His Majesty's sugar colonies and the dominions now forming the United States of America, was, in time of peace, chiefly carried on by American shipping, of which a large proportion consisted of sloops, schooners, and other small vessels adapted to the cheap conveyance of bulky commodities, for a short navigation, and not at all fit for or employed in the conveyance of sugar from the West Indies to Europe, but which took back the returns for their own cargoes in the superfluous produce before mentioned; and that although the direct intercourse with America in American ships is, by His Majesty's proclamation, freely permitted to the petitioners' fellow subjects, not only in Great Britain, but in Ireland, it is withheld from the petitioners, to whom, of all His Majesty's subjects, it is the most essential; and the said intercourse stands restrained to British-built ships, by which if the trade were to be carried, they must generally proceed from Great Britain to America in ballast, at a ruinous expense, and greatly enhance to the consumer the price of those commodities which form the foundation of all his culture, and which the petitioners conceive that every principle of commercial policy coincides in requiring to be conveyed to his hand at the cheapest rate possible.

It then states that additional duties upon the consumption of the said superfluous produce of His Majesty's sugar colonies in the dominions of the American states, and on British ships trading thither, have been imposed upon by the express ground of Great Britain prohibiting that intercourse by American vessels which the French sugar colonies not only admit, but, with true policy, invite, whereby a preference most dangerous to our essential interests is

given to the foreign sugar colonies, in the demand for those commodities which there is no natural obstacle to their supplying as well as we can, although their regulations had hitherto prevented it; and that, under all these circumstances, the petitioners are impelled, by every public and private duty, in the most explicit terms to inform the House that if, by means of this prohibition the British sugar colonies are deprived of a market for that part of their produce which is superfluous to Great Britain and Ireland, and loaded with the additional expense of procuring lumber and provisions, above stated, which seems the inevitable consequence of persevering therein, the cultivation of the said sugar colonies can not be carried on at all, nor any of them to advantage; for which reasons the petitioners are convinced, and submit to the House, that far from being favorable to British navigation, the prohibition in question is big with destruction to one of its principal sources; and, if it should be persisted in, His Majesty's sugar colonies must, in the natural course of things, sink, together with the navigation, revenues, and all the complicated public interests thereon dependent, in one common ruin with the private fortunes of the petitioners, etc.

This petition strikes at the very root of the navigation act, which is the basis of our great maritime power, and has given us the trade of the world. It was therefore ordered to lie upon the table, as a matter of future consideration.

## EXPORTS DECLARED FOR THE UNITED STATES.\*

### SPAIN.

*Exports during the quarter ending September 30, 1894.*

Articles.	Alicante.	Barcelona.	Bilbao.	Cadiz.	Denia.
Almonds.....	\$19,593.60				
Books.....				\$99.70	
Cork.....				1,839.09	
Cork wood.....				76,249.28	
Feathers.....		\$66.29			
Grass, esparto.....	238.85				
Glycerin.....		56,968.47			
Household goods.....		1,715.29			
Jackasses.....		2,828.45			
Lead.....				14,715.67	
Licorice root.....	14,421.05	22,216.60		9,476.88	
Ore:					
Iron.....			\$1,234.00		
Cupreous sulphur.....				328,110.59	
Olives.....				3,777.20	
Olive oil.....		68.99			
Onions.....					\$25,420.00
Pepper, red.....		208.52			
Paper:					
Cigarette.....		196.72			
Straw.....			162.00		
Pyrates, iron.....				140,127.50	
Pottery.....				131.62	
Raisins.....					154,711.20
Soap.....				91.48	
Silver purses.....					300.86
Seed, canary.....				18,298.29	
Tartar.....		35,110.78			
Vegetables, canned.....		92.64			
Water, mineral.....		4,963.73		59.21	
Wine.....		270.01			
Total.....	34,253.50	124,706.49	1,396.00	592,976.51	180,432.06

\* Received too late for publication in CONSULAR REPORTS No. 171 (December, 1894).

*Exports from Spain during the quarter ending September 30, 1894—Continued.*

Articles.	Grao.	Malaga.	Madrid.	Tarragona.	Total.
Almonds.....		\$51,325.72		\$24,425.86	\$95,345.18
Books.....					99.70
Cork.....					50,553.01
Cork wood.....					76,249.28
Filberts.....				1,145.88	1,145.88
Feathers.....					66.29
Grass, esparto.....					238.85
Grapes.....		149.80			15,755.80
Glycerin.....					56,968.47
Hats, palm leaf.....		20,262.48			20,262.48
Hides.....	\$4,152.03				4,152.03
Household goods.....					1,715.29
Jackasses.....					2,228.45
Lead.....					14,715.67
Lemons.....		24,337.68			24,335.68
Licorice root.....					46,114.53
Miscellaneous.....	32.84	715.26	\$1,290.39		2,141.22
Models.....		333.68			333.68
Ore:					
Iron.....					1,234.00
Cupreous sulphur.....					328,110.59
Olives.....					3,777.20
Olive oil.....					68.99
Onions.....	877.67				26,227.67
Pepper, red.....		314.54			523.06
Paper:					
Cigarette.....					196.72
Straw.....					162.00
Pomegranates.....		732.88			732.88
Pyrites, iron.....					140,127.50
Pottery.....					131.62
Raisins.....		17,989.90			172,701.10
Soap.....			3,875.19		3,966.67
Silver purses.....					300.86
Saffron.....	1,718.14				1,718.14
Seed, canary.....					18,298.29
Skins, goat.....			7,053.21		7,053.21
Tartar.....					35,110.78
Vegetables, canned.....					92.64
Water, mineral.....					5,022.94
Wine.....	277.87	2,339.33		7,715.27	124,707.07
Total.....	7,058.55	118,499.27	12,218.79	33,287.03	1,283,488.47

The following exports declared at the consulates named are included in the above total: Almeria, grapes, \$15,606; Carthagena, ocher (crude), \$133.05; Palma, miscellaneous, \$102.73; San Feliu, cork, \$48,713.92; Xeres, wine, \$114,104.57.

HANNIS TAYLOR,  
Minister.

MADRID, November 20, 1894.



## TURKEY.

*Exports during the quarter ending September 30, 1894.*

Articles.	Beirut.	Constantinople.	Jerusalem.	Smyrna.	Total.
Attar of roses.....		\$21,276.68			\$21,276.68
Pure.....		1,915.75			1,915.75
Canary seed.....				\$3,620.32	3,620.32
Carpets and rugs.....		107,255.75		16,554.78	123,810.53
Embroideries.....		3,478.85			3,478.85
Emery stone.....				18,482.33	18,482.33
Figs.....				250,899.66	250,899.66
Flower cards.....			\$110.97		110.97
Gum tragacanth.....		13,459.48			13,459.48
Guts (sheep).....		167.06			167.06
Licorice root.....	\$113,867.00			117,682.66	231,549.66
Meerschaum.....		3,740.00			3,740.00
Millet seed.....		636.00		938.52	1,574.52
Mohair.....		58,457.54			58,457.54
Mother-of-pearl work.....			475.38		475.38
Oil (olive).....				17,079.92	17,079.92
Olive wood work.....			1,311.51		1,311.51
Opium.....		107,872.09		10,743.39	118,615.48
Ore (iron).....		27,289.10		49,443.10	76,732.20
Oriental articles and bazaar goods.....	4,356.55	4,143.80			8,500.35
Rags.....		352.39			352.39
Raisins.....				47,439.39	47,439.39
Rubber (waste).....		817.21			817.21
Skins (goat and kid).....		69,891.02			69,891.02
Slippers.....		1,291.57			1,291.57
Soap (white castile).....	2,397.94				2,397.94
Sundries.....		6,588.98		225.19	6,814.17
Tobacco.....		533.85		63,020.45	63,554.30
Wool.....	84,283.63	94,217.22		158,444.44	336,945.29
Total.....	204,905.12	523,384.34	1,897.86	754,574.15	1,484,761.47

There were no exports declared at Bagdad or Sivas during the quarter.

LUTHER SHORT,

*Consul-General.*CONSTANTINOPLE, *November 23, 1894.*

## CALIFORNIA WINES JUDGED BY FRENCH EXPERTS

On the 2d of June, 1894, at the Agricultural Institute, of Paris, a committee of wine experts composed of M. Garnier, president of the Chamber of Wines and Spirits of the Department of the Seine; M. Gervais, secretary of agriculture of Herault; M. Droin, ex-president of the Tribunal of Commerce of the Seine; M. Pinson, ex-commission merchant; MM. Michy, Bonvalet, and Houdart, wine merchants; M. Desmoulin, attached to the staff of the Moniteur Vinicole; and MM. Muntz, Hérisson, Schriebeaux, Girard, Kayser, Wéry, Viala, Convert, Lamarié, and Mazade, wine

experts, met to give their opinion on about one hundred samples of California wines selected by Mr. F. Gos in the wine cellars of California and brought by him to Paris. In his report to the National Society of Agriculture, Mr. Gos, who has devoted his labors, time, and energy to all questions connected with the cultivation of the vine and the making of wine, and who is himself a vine grower, states, as the result of the investigations of this committee, that the vine growers of California have made, in a short time, rapid progress in the art of preparing wine, but that, however much they have accomplished, they have yet a good deal to do, and it is probable that they will never surmount certain obstacles engendered by the climate and some other causes which will likely always prevent them from obtaining fine table wines.

As a general rule, the ordinary wines, which are most commonly used, have been declared the best, and some of them have even compared favorably with the French *bons ordinaires*. They do not, however, improve with age, but, when two years old, seem to lose their quality. In the category of *vins ordinaires* the red wines have been found superior to the white wines, by reason of the fact that most of the latter are made exactly like the red wines, the white grapes used in this case being allowed to ferment in bunches. The Zinfandel wine has attracted the favorable attention of the committee on account of certain qualities it contains which are not found in the products of the other common wines.

The wines of better grade, made with the grapes grown on the vines imported from Burgundy and the Bordeaux districts, have been pronounced generally good and not lacking in aroma and clearness; however, they have been declared not to possess the "bouquet" to be found in the products of the famous wine regions of France, and, although they are at first fragrant, they do not leave a durable taste in the mouth after they have been absorbed. The opinion of the committee is that they are harsh, and, as they express it, "rasp the throat," which, unlike the Americans, the French connoisseurs do not consider as qualities. Here they declare that no great reliance can be placed in the future development of the cultivation of the vine in California—that the natural conditions surrounding the local production are better adapted to the making of ordinary wines, but that, unfortunately, no outlet exists for these wines in the United States, where the population uses ice water, tea, coffee, milk, and alcohol, but very seldom drink wine. While in the United States the consumption of distilled liquors reaches 6 liters (6.34 quarts) per year per head, that of wine is scarcely 1.4 liters (1.48 quarts), and the day is far remote, if it ever comes, when the extra qualities of California wines, the aim toward which all the efforts of the vine growers of that country have been directed, can be placed side by side with the best wines of France.

Twelve samples of brandy, made by the best firms of California, have been pronounced good, but very inferior to the products of the French Charentes.

The committee] adds that, by reason of the difficulties found in wine making, the growers of southern California have turned their attention to the manufacture of vinous liquors, and have fully succeeded in this line. Their port, Xeres, Malaga, and even their Muscat, equal those of Spain and Portugal.

In conclusion, this committee is of the opinion that the country lying north of San Francisco is the best adapted for fine wines, while the middle region can produce but common ordinary wines, and southern California is destined to secure big profits to the manufacture of vinous liquors, brandies, and to those engaged in the raisin business.

The committee finds in the example of California the evidence of the fact that if perfection can not be attained without many trials and sacrifices, wine production presents very great difficulties. The California pioneers, they say, have exhibited more energy than prudence, and they realize to-day that fine wines can not be made extempore; that it is not sufficient to possess fine vines and general notions of wine making in order to constitute that peculiar and unaccountable thing which is called *crû*.\* And, by way of consolation, the French experts are willing to concede that the Californians have done considerable work, that their cellars are admirably fitted up, that their plants are perfectly constructed and operated, that they have neglected nothing to make their goods attractive and to introduce them, and that they are progressing continuously and every year obtaining better results. The acknowledgment is made that the wines of the two last vintages are already very superior to those of the preceding years, and that their final success would be certain if they could overcome the repugnance of the American population to the use of wine.

That French wine experts, always so conservative and slow in acknowledging even a resemblance of foreign-made wines with theirs, should concede that California is making a class of goods which can be compared to some of France's products, ought certainly to be a great encouragement for the vine growers of California to persevere in their so far successful efforts. Our farmer has not only the tenacity of the French peasant, but surpasses him in education and intelligence; he is better prepared for the struggles of life; his spirit of boundless initiative and enterprise helps him to overthrow obstacles which most generally discourage and stop his timid European brother, accustomed to look and wait for the impulse or suggestion emanating from the officially constituted authorities. American energy is known to increase in direct ratio to the difficulties confronting it, and while it makes the envy of the old world, it will lead our people to gradually master the secrets of vine growing and wine making until *crûs* shall be found in the United States to equal those of France; and, should the supply in the United States exceed the demand, new markets might be found in Europe itself, where wine drinking, being considered a necessity even among the poorest classes of society, a pure American ordinary wine would inevitably,

\* *Crû* is the name given in France to a generally very small area of country, every inch of which produces identically the same quality of grapes and wines, which can not be found elsewhere.

all tariff prohibition once removed, replace on the laborer's table the adulterated article sold him under the name of wine.

Owing to the rupture of commercial relations with France, Switzerland, whose importation of French wines in 1893 has fallen off 93 per cent of what it was in 1891, has become a desirable market for our California wines. Other countries may likewise, in the course of time, be opened to the enterprise of our wine merchants.

HENRY P. DU BELLET,

RHEIMS, *November 15, 1894.*

*Consul.*

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### COTTON COMMISSION FROM GERMANY.

The German Government has recently sent a commission to study the cultivation and manufacture of cotton in the United States, and, thinking that the work of this commission may be of interest, I beg to forward the following information relative to the object in view.

The most important inquiries are:

- (1) Method of cultivation and implements used therefor.
- (2) Improvements in machinery for preparing cotton for market.
- (3) Difference of conditions and cost of production of cotton before and after the war.
- (4) The quality of cotton before and after the war.
- (5) The success of the cotton-seed oil industry and the cost of the production of cotton.

(6) The advantages possessed by the Southern States over the New England States, England, and Germany in the manufacture of cotton goods.

The principal object in view is to determine whether the cotton produced in the United States meets the needs of the German manufacturer, or whether it would be better to buy elsewhere all or part of the raw cotton used in Germany.

MAX JUDD,

VIENNA, *November 7, 1894.*

*Consul-General.*

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### AMERICAN COTTON IN TURKESTAN.

A certain Tartar prince is named as the pioneer of American cotton raising in the vast region called Russian Turkestan, in place of the much inferior domestic product. He went to that country in 1883, and immediately set about encouraging the farmers of Turkestan to raise American cotton on their lands, in many cases lending them money on the security of the future crops. He established cotton gins, receiving a subsidy from the Imperial Government to uphold and further his enterprise, and his example was soon followed by several large firms of European Russia. A few wealthy merchants of Bokhara are now also engaged in the cotton trade of Russian Turkestan. According to the report of a railroad commission sent out with

the object of investigating the commercial resources of central Asia, over 1,100,000 rubles were loaned last year by different firms to the cotton growers of Russian Turkestan upon the security of their crops.

It may be said, in general, that the raising of American cotton has been making considerable progress in Russian Turkestan. In the year 1892, 400 dessiatines (1,080 acres) were planted with American cotton in the district of Dshisak, province of Samarcand, producing a crop of 26,000 poods (738,912 pounds) of raw cotton, from which 6,500 poods (234,000 pounds) of clean cotton were obtained; that is, 216 pounds per acre on the average. Later reports are wanting.

In the whole province of Samarcand, there are eight cotton gins. In the year 1890, there were in all 2,315 dessiatines (5,764 acres) planted with American cotton, and 5,838 dessiatines (15,762 acres) with domestic cotton. In 1892, the proportion was reversed, there being 4,520 dessiatines (12,204 acres) devoted to American cotton, and only 1,300 dessiatines (3,510 acres) to domestic cotton. The crops show the following results:

Year.	American cotton.	Domestic cotton.
	<i>Poods.</i>	<i>Poods.</i>
1890.....	64,050	233,580
1891.....	188,505	99,360
1892.....	293,800	84,500

In the district of Khojend, 500 dessiatines (1,350 acres) were planted with American cotton in 1890, and 1,750 dessiatines (4,725 acres) with domestic cotton. In the year 1892, however, 3,887 dessiatines (10,495 acres) were planted with American cotton, and only 1,861 dessiatines (5,025 acres) with domestic cotton. The crops were reported as follows:

Year.	American cotton.	Domestic cotton.
	<i>Poods.</i>	<i>Poods.</i>
1890.....	22,500	105,000
1891.....	145,046	163,020
1892.....	252,655	120,965

The quantity of pure cotton obtained in the district of Khojend in 1892 is stated at 105,000 poods (3,780,000 pounds), which means 244 pounds of clean cotton to the acre on a general average.

The expenses of preparing cotton for the market are given at the following figures per pood (36 pounds), 2 copecks being equal to about one cent: \* Cleaning, 9 copecks; pressing, 5 copecks; packing, 30 copecks; carriage from Khojend to Samarcand, the terminus of the Transcaspian Railroad, 24 to 30 copecks.

\* This would give a value of 50 cents to the ruble, which is valued at only 37.1 cents by the United States Treasury Department.

The price of American raw cotton at Samarcand in 1892 was 1.60 rubles per pood (2.2 cents per pound), and of the domestic raw product 1.20 rubles (1.6 cents per pound). Clean American cotton had a market price of 7.20 rubles per pood (10 cents a pound); clean domestic cotton 5.35 rubles per pood (7.5 cents per pound). The present market price of the best American cotton from Turkestan, delivered in Moscow, is 7.75 to 7.80 rubles, and for future delivery, 7.90 to 8 rubles per pood.

The steady progress of cotton culture in central Asia will be apparent from the subjoined table, giving the quantities of cotton carried by the Transcaspian Railroad to the Russian market:

Year.	Quantity.	Year.	Quantity.
	<i>Poods.</i>		<i>Poods.</i>
1888.....	873,092	1891.....	2,626,110
1889.....	1,470,503	1892.....	3,026,518
1890.....	2,673,267	1893.....	3,588,025

Of the whole bulk of cotton shipped last year, 2,000,000 poods (72,000,000 pounds) were American cotton raised on about 100,000 dessiatines (270,000 acres) of land. In the year 1884, the whole crop of American cotton was only 7,000 poods raised on 205 dessiatines (553 acres) of land. American cotton has been steadily supplanting the domestic growth, but it is said that the plant deteriorates in Turkestan, and can only be kept up to its higher standard by a frequent renewal of American seed.

The volume of cotton imported to Russia from foreign countries, mainly from the United States through London and Hamburg brokers, was 10,149,000 poods in 1892, and only 7,631,000 poods in 1893—a striking decline. During the present year, the importation of cotton has been somewhat larger again, and will probably reach 9,000,000 poods. The entire consumption of cotton in European Russia appears to have been 13,740,518 poods (in the neighborhood of 500,000,000 pounds) in the year 1892, and about 2,000,000 poods less during last year.

CHARLES JONAS,  
*Consul-General.*

ST. PETERSBURG, *November 6, 1894.*

## DECREE AGAINST AMERICAN CATTLE IN DENMARK.

I transmit herewith copy and translation of a proclamation from the Minister of the Interior of Denmark, prohibiting the importation into this country of live cattle and fresh beef from America. The notice is taken from yesterday's issue of the *Berlingske Tidende*, which is the official organ here. Fear of the "Texas fever" is given as the cause of the prohibition.

ROBERT J. KIRK,  
*Consul.*

COPENHAGEN, *November 21, 1894.*

## PROHIBITION AGAINST THE IMPORTATION OF LIVE CATTLE AND FRESH BEEF FROM AMERICA.

[Translation.]

To prevent the so-called Texas fever, which is prevailing in America at present, from being brought into this country, it is prohibited, in conformity to the law relating to infection of diseases of animals of April 14, 1893, section 14, until further notice, to import from said country live cattle or fresh beef.

This provision does not apply to meat which arrives in hermetically closed cans.

The proclamation of the Ministry of Interior of February 14, 1879, concerning the prohibition against the importation of live horned cattle from the United States, is hereby cancelled, as the prohibition contained therein is repeated above.

This ordinance goes into effect at once.

NOTE BY THE BUREAU OF STATISTICS.—It may be well to state here that neither cattle nor fresh beef are exported from the United States to Denmark. The following statement, compiled from the annual reports of the Bureau of Statistics, Treasury Department, shows the exports of cattle and fresh beef from the United States during the fiscal years 1893 and 1894:

Description.	1893.		1894.	
	Quantity.	Value.	Quantity.	Value.
<i>Cattle.</i>	<i>Number.</i>		<i>Number.</i>	
Belgium.....	1,440	\$129,190	1,377	\$125,060
France.....	419	41,800	5,184	450,000
Germany.....			3,069	285,792
Netherlands.....			488	48,800
Great Britain.....	280,996	25,665,155	346,734	32,345,175
Total to Europe.....	282,855	25,836,145	356,852	33,254,827
Other countries.....	4,239	196,343	2,426	207,095
Grand total.....	287,094	26,032,488	359,278	33,461,922
<i>Fresh beef.</i>	<i>Pounds.</i>		<i>Pounds.</i>	
Germany.....			1,066	\$80
Great Britain.....	205,911,093	\$17,720,032	193,331,292	17,659,814
Total to Europe.....	205,911,093	17,720,032	193,332,358	17,659,894
Other countries.....	383,631	34,009	559,466	40,263
Grand total.....	206,294,724	17,754,041	193,891,824	17,700,163

## ASPHALT DEPOSITS NEAR CARDENAS.

The asphalt deposits in this consular district (Cardenas, Cuba) are nearly all submarine and situated in the bay of Cardenas. It is not known that any scientific examination into their source has been made. This territory, being of limestone formation, has very extensive subterranean passages. On each side of the city are underground streams of fresh water of such magnitude that they are generally described here as rivers. They are the source of the supply of potable water for the city, and they provide all the water consumed in the numerous sugar boiling establishments and other manufacturing enterprises of the place. As the mines in the bay are slowly, but continually, resupplied with asphalt, it seems very probable that the source of this product is inland, and its course to the bay is through these subterra-

nean passages. As no thorough search has been made in the bay for the asphalt, there is a great likelihood of the discovery of deposits other than those which are now known.

As regards inland deposits, I am informed by a gentleman residing here, whose character is perfectly trustworthy, that he has discovered one within 15 miles of a railroad station, with good facilities for the construction and operation of a road and for the delivery of the product at a shipping port. This deposit is capable of yielding from 1,000 to 5,000 tons annually at slight expense and for many years, owing to the replenishment which is continually in progress. This deposit produces also an oil which has been burned in common kerosene oil lamps with good results.

The deposits in the bay from which asphalt has been taken are four in number and of two grades. No. 1 is in the western part of the bay, and produces a very fine grade of practically pure asphalt, used in the United States for the manufacture of varnish. I have myself seen a serviceable varnish made by the simple process of dissolving this quality of asphalt in turpentine. Asphalt has been taken from this deposit in large quantities for the last twenty-one years. Recently, however, the work has not made rapid progress, owing to the frequent caving in of the sides of the shaft. The mode of operation is almost primitive. A lighter is moored over the shaft, which is from 80 to 125 feet in depth—varying according to the rapidity with which the asphalt is removed and replenished. A long iron bar, with a pointed end, is raised by a winch on board the lighter and allowed to fall so that its own weight detaches portions of the asphalt, which is about as friable as cannel coal, and has much of its appearance. The gloss, however, is more brilliant. After a sufficient quantity has been detached, a common scoop net is sent down and filled by a diver—not in a diving suit. The average quantity obtained is from a ton to a ton and a half daily. The price for this grade, delivered in New York, ranges from \$80 to \$125 per ton of 2,240 pounds.

The other three mines are of a lower grade, the product being used chiefly for paving purposes, but occasionally for roofing materials. No. 2 is northeast of Cay Coupe. No work has been done there since the hurricane of 1888, which caused the shaft to be filled up with silt. Previous to that time, several cargoes were taken from the deposit. Nos. 3 and 4 contain asphalt of the same grade as No. 2, and adapted for the same purposes. No. 3 is situated at the mouth of the River La Palma, about 20 miles from Cardenas. It is in the same condition as No. 2. No. 4 is situated near Diana Cay, 15 miles from the city of Cardenas, and is the largest of all. It is called the "Constancia Mine," and is owned by persons residing at Cardenas. It has been under operation for more than twenty years. Probably 20,000 tons have been taken from it, and it appears practically to be inexhaustible. Vessels of from 150 to 200 tons have been moored over the deposit, and have been loaded by the joint labor of their own crews and the crew of the lighter usually engaged in this labor. The depth of water is



about 12 feet. As there are several wells of no considerable depth, the facilities for procuring the asphalt are abundant. The deposit is inclosed within a circumference of about 150 feet, and the asphalt seems to be continually renewed in every part of this space. In 1882 an American vessel took on board, in the manner I have just described, over 300 tons in the space of three weeks.

That the deposits of asphalt in the bay can be profitably worked as at present with methods seriously lacking in economy, suggests very strongly that considerable profit can be derived from the introduction of efficient machinery; the advantage would undoubtedly be increased in the case of easily accessible mines in the interior.

JOS. L. HANCE,  
*Commercial Agent.*

CARDENAS, *November 19, 1894.*

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### NEW RAILWAY IN VENEZUELA.

I have the honor to inclose copy and translation of a contract for the construction of a railway between the city of Coro and Sabaneta, touching at various intermediate points. The line will be of considerable local importance, giving easy means of transportation from the interior to Coro. The direct railway communication which now exists between the seaport of Tucacas and the city of Barquisimeto, metropolis and capital of the rich agricultural state of Lara (formerly Barquisimeto), has injured Coro as a shipping and receiving port, and it is only by means of railways from the latter city to the interior that it can regain control of this traffic.

E. PLUMACHER,  
*Consul.*

MARACAIBO, *November 15, 1894.*

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[Translation.]

The Minister of Public Works, sufficiently authorized by the President of the United States of Venezuela, with the affirmative vote of the council of government of the first part, and of the second part Juan Francisco Galletti, for himself and in representation of Pedro B. Bracho and Eduardo Madriz, have celebrated the following contract:

ARTICLE 1. The Government of the Republic of Venezuela concedes to Galletti the preferred and exclusive right to construct and operate a railway which, starting from the city of Coro, capital of the State of Falcon, shall reach Sabaneta, municipality of the district of Coro, passing through Boraure, El Cardon, and El Brasil.

ART. 2. The work of construction of the said railway shall commence at Coro within one year from the approval of this contract by the National Congress.

ART. 3. The line, which will have an extension of about 32 kilometers (19.88 miles), shall be constructed and opened to public traffic by sections within two years (if not sooner) from the beginning of the work.

ART. 4. Accidental or unavoidable interruptions, legally proven, will entitle the contractor to a prolongation of time beyond that stated as necessary for the completion of the work.

ART. 5. The road will be single track, with a width between rails of 1.07 meters (3.5 feet). The grades shall not exceed 3 per cent, and the curves shall have a minimum radius of 75 meters (254.6 feet).

ART. 6. The material employed in construction shall be of the best quality, and the workmanship in accord with scientific improvements.

ART. 7. The contractor may construct, on his own account, the offices and warehouses which may be necessary.

ART. 8. The contractor is authorized to open for public traffic sections of the line as they may be finished while the remainder is being constructed, charging a tariff proportional to the distance in accord with the National Government.

ART. 9. The contractor will establish for the exclusive use of the line, a telegraph and telephone line from the city of Coro to Sabaneta, with all the apparatus necessary for instantaneous communication between the two stations.

ART. 10. The contractor shall have the right to take from the lands belonging to the nation where the line crosses, and without the payment of any indemnity, the wood and other materials necessary for the construction and repair not only of the road, but of its offices and warehouses.

ART. 11. In conformity with ruling legislation upon the subject, the National Government cedes to the contractor portions of public lands, should they there exist, on both sides of the road and for its entire length, alternate sections 500 meters in length along the line by the same amount of breadth, the other sections to be reserved by the Government.

ART. 12. The Government of the Republic will take for the public use, in accordance with the law of expropriations, private lands upon which the road is to be constructed, as well as the sites of offices and warehouses, all in conformity with the latest decrees upon expropriations, the contractor paying the value of the land expropriated.

ART. 13. The tariff of freight and passage will be fixed by common accord between the Minister of Public Works and the contractor.

ART. 14. The contractor binds himself to transport, gratis, the correspondence dispatched by the post-offices of the Republic.

ART. 15. Public employees and soldiers traveling in commission and for account of the Government will enjoy a rebate of 50 per cent only upon the regular tariff.

ART. 16. The Government of Venezuela will permit the introduction, free of duty, at the port of La Vela of all the machinery, tools, rolling stock, and materials of construction necessary for the work of the line or for the offices and warehouses.

ART. 17. This enterprise can not be charged within the period of the present contract, with any national impost or contribution now existing or which may be created, whatever may be its origin, reason, or denomination.

ART. 18. The duration of this contract shall be for ninety-nine years, counting from the date of its approval by the National Congress.

ART. 19. During this contract, the Government binds itself not to permit any other person or company to construct railroads within the zone referred to in the present contract.

ART. 20. The contractor, his heirs and successors will retain the perpetual and exclusive property right in the line and other properties and constructions acquired by virtue of this contract.

ART. 21. Except in the case of international war, all of the employees and laborers of the railway will be exempted from military service.

ART. 22. The present contract may be transferred, in part or in all, to any individual or company, native or foreign, with the consent of the Government, but it may not be transferred to a foreign government.

ART. 23. The doubts or controversies which may arise respecting this contract shall be decided by the tribunals of the Republic in accordance with its laws, but in no case may they give rise to international reclamations.

Caracas, October 20, 1894.

No. 172—9.

## NOTES.

**A Disease of the Violet.**—Under date of November 27, Consul Germain, of Zurich, writes:

Newspapers from the south of France report that the disease noticed among violets in the last two years has of late taken a new expansion and a strong start. But few people are aware of the important role the industry of growing violets plays in the south of France, and particularly on the French Riviera; it is not surprising, therefore, that the gardeners and floriculturists are getting alarmed. In the departments of the Maritimes Alpes and Var, the growing of violets, which is done in the open fields, has become an article of commerce, the value of which reaches into the hundreds of thousands annually. The disease makes itself known by the wilting of the leaves, which soon after drop off, leaving nothing but the bare roots. As a remedy, a copper solution applied to the leaves has proved the most efficient. But the labor involved in spraying so many plants is very tedious and expensive. Scientific men have not the same good opinion of the violets as have the gardeners. While the green leaves, when boiled, produce a slimy tea, to which many healing properties are attributed, and which, for instance, Kneipp recommends as a remedy against whooping cough, the roots, nevertheless, are venomous. This was demonstrated by Professor Cornevin in his book on venomous plants. He writes that small parts of the violet root, introduced in the organism, bring about nausea, painful vomiting, nervous cases, interruption of the blood circulation, breathing complaints, and apparitions which, with sufficient potions, become serious, and may bring about death. Cornevin adds that the chemist Boullay prepared an alkaloid from the violet root, which he has named "Violin," and which has proven to be a powerful emetic. Botanist Lagrave has also observed that a certain relation exists between the strong perfume of the violets and the venomous qualities of its roots, because the roots of the so-called wild or dog violets, which have no perfume, are not venomous.

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**Demand for Granite in the Netherlands.**—Under date of November 17, Consul Stephan, of Annaberg, writes:

The attention of the German Government has been called to the fact that the entire supply for the Netherlands of hard building stones, particularly of granite, is drawn from foreign countries, and that Norway furnishes the greater part of this material. The Dutch contractors have used the Norwegian stone for years, and have found it to be entirely to their satisfaction. The German Government thinks there is no reason why German granite should not meet with the same favor in Holland as that of Norway, and it has called the attention of the boards of trade to the subject. The harbor improvements and sluice building alone require in that country enormous quantities of granite, of which the accurately cut and squared block is preferred to the rough, or unhewn, stone. The German quarrymen are advised to make detailed offers to the Minister of Public Works at The Hague, accompanied by samples and opinions of official experts as to the quality of the stone. There is no doubt as to the superiority of our Blue Hill (Maine) granite, and it would surely meet all the requirements of the Dutch Government and contractors if their attention were called to it. Owing to the proximity of the Maine quarries to the Atlantic ports, it seems as though the Norwegian or German quarrymen should have no advantage over their American colleagues. It rests, however, with the latter to decide.

**The Mining Exhibition in Chile.**—Secretary of Legation McGarr sends the following to the Department from Santiago, Chile, under date of October 29:

After several postponements, the Chilean National Mining and Metallurgical Exposition was opened yesterday with formal and imposing ceremonies, in which the President of the Republic and the principal functionaries of the State, civil, and military assisted. The attendance was large, estimated at 20,000 persons, and the programme announced for the opening was carried out in all its details. The number of exhibitors—more than four hundred—is considerably in excess of that expected, and the building space provided is insufficient for the operation of the whole collection of machinery. Further erections will soon be completed, and, in a couple of weeks, the exposition in all its mining features, embracing eight sections, will be in full display. The value of the machinery exhibited is said to amount to more than \$5,000,000, Chilean currency. Next month, there will be added agricultural and horticultural departments. Foreigners conversant with such matters say the exposition is highly creditable, and the Chileans are flattered at the magnitude to which the enterprise has grown, and the success which has marked its inauguration.

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**Zurich's Industrial Exposition.**—Consul Germain, of Zurich, reports to the Department November 10:

The industrial exposition of the canton of Zurich, which opened on the 15th of June and closed on the 15th of October, has proven a financial success. The management added a large restaurant to the many attractions, and gave afternoon and evening concerts therein for the accommodation, amusement, and benefit of the exposition patrons. One feature worth mentioning was that none but local wines, grown in this canton, and beer brewed in the same, were sold at the restaurant. The report just published by the restaurant manager shows that during the four months' run 50,242 quart bottles and 64,270 pint bottles of Zurich wine, or about 575 hectoliters (15,191 gallons) were sold to the patrons of the restaurant, all of which was purchased direct from the producers in the canton of Zurich. The wine consisted of forty-three different kinds—white and red, new and old. In addition thereto, 1,580 hectoliters (41,741 gallons) of local beer were sold at the same place, making the daily beer consumption 12 to 13 hectoliters, or 317 to 343 gallons.

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**American Well-Boring Machinery.**—Under date of November 9, Consul Bornholdt, of Riga, in his annual report, refers as follows to American well-boring machinery:

The persons attacked by cholera during the recent outbreak of that disease were chiefly laborers on board ships, and men engaged on the river, who, regardless of the notice published by the sanitary authorities, drank unboiled river water. Several private artesian wells have been placed at the disposal of the inhabitants, but these not being sufficient to meet the demands, the municipal council has under contemplation the sinking of twenty or thirty artesian wells in different parts of the city. As the United States are ahead of all other nations in deep well boring, I have interested myself for the introduction of American machinery for this purpose, and trials are now being made with steam drilling machines from New York, imported by a party in Riga. If these trials are successful, well digging will be carried out on a large scale in this country on the American system.

**Straw-Plaiting Industry in Germany.**—Consul Stephan, of Annaberg, writes, under date of October 15:

The straw-plaiting industry, with its seat in Dresden, Saxony, is beginning to feel the effects of the war in eastern Asia. The straw-hat manufacturers usually draw their material, put up into straw braids, from China and Japan. The blockading of the ports from which these braids were exported has created a scarcity and higher prices of the raw material. Manufacturers are beginning to look for other sources from which to supply their demand, and expect to be on the spring market—having nothing better—with home products. This will bring the two mountain towns—Geising and Altenberg—to the front.

**Finances of Haiti.**—Consul-General Smythe writes to the Department from Port-au-Prince, November 3:

I send herewith the report of the National Bank of Haiti, showing the situation of the bank on December 31, 1893.\* All the money used in commerce except American gold, is placed in circulation by this institution, and the sums represented show all the money in circulation among the people. The rate of premium in American gold fluctuates between 12 and 20 per cent, and is at the highest rate now. Exchange in francs, as a rule, is about 2 to 2½ per cent more. I have not been able to learn why the rate of exchange is so high just now, when the country is peaceful and seems prosperous; unless it arises from the fact that an unusually large coffee crop is just now being put on the market, and large sums of gold or exchange will be necessary to move it. The Haitian money consists entirely of \$1 and \$2 bills and silver coins from \$1 (gourde) to 10 cents.

**Sugar-Cane Crop of Sagua la Grande.**—Consul Barker, of Sagua la Grande, Cuba, writes to the Department under date of November 20:

I have the honor to submit the following report on the sugar-cane crop of this consular district: The present growing crop, owing to an unusually favorable season, promises to be an abundant yield. These same favorable conditions, I learn, exist throughout the cane growing lands of the island. While the yield of sugar per acre will be large, I do not think it will exceed the crop of the past year, for, owing to the great scarcity of money, and the difficulty planters have in securing laborers, there has been not only a small decrease in the lands in cultivation, but the growing cane has been neglected and not weeded out as it required to be. The sugar estates of this consular district are, with a few exceptions, insolvent. This condition of things is attributable to several causes, the most potent of which is the fact that the planters of recent years have invested largely in new and improved machinery, bought on time, at "time prices," expecting to realize not less than 7 reales (3½ cents) for their sugar, but instead got about 5 reales (2½ cents). In addition, planters pay high wages for most indifferent labor, and as they must borrow money they are entirely at the mercy of the usurer, whose rate of interest, with first-class collateral, is 1½ per cent per month. Even at this rate, money is scarce, and planters are compelled to give their first grindings, up to a stated date, without regard to the price of sugar or state of the market. Owing to the present outlook, the sugar market will open at a low rate, and the prospect for Cuban sugar raisers is indeed gloomy. The scarcity of money will force smaller planters to begin grinding one month before the usual time, which, of course, means quite a loss in cane juice.

\* Report filed in Bureau of Statistics, Department of State.

**Bureau of Labor in Belgium.**—Consul Morris, of Ghent, in a report dated November 20, says:

The last issue of the *Moniteur*, the official journal of Belgium, appearing November 17, 1894, contains a royal decree by which a bureau of labor is established in the Ministry of Agriculture, Industry, and Public Works. This department is to be known as the Ministry of Agriculture, Industry, Labor, and Public Works. The bureau of labor was organized to collect, arrange, and publish all information concerning labor, especially in respect to the condition and development of production, the organization and the remuneration of labor, its relation to capital, the condition of workmen, the comparative situation of labor in Belgium and abroad, accidents to labor, strikes, cessation of work, and the effects of laws which especially interest industry and labor, to cooperate in the study of new legislative measures and improvements to be introduced in existing legislation, and to watch over the execution of the laws relative to labor in so far as may be indicated by regulations.

**Production of Potash Salts in Germany.**—Consul-General Mason, of Frankfort, writes, under date of November 23:

I have the honor to acknowledge the receipt of Department instruction dated the 10th instant, inclosing a letter from a Philadelphia chemical company, in which are pointed out several errors in my report on the "Production of Potash Salts in Germany," as published in *CONSULAR REPORTS* No. 169 (October, 1894). I have compared the printed report with the retained press copy of the manuscript in this office, and find that some of the errors were my own, while others, including those in the chemical symbols, were typographical, and resulted, not unnaturally, from the fact that in the symbols the atomic numbers were printed by me with typewriter, on the line, instead of being inserted with a pen below the line, as should have been done. It may be remembered that the report was made in order to supply the place of an alleged English consular report on the same subject, which the Department had instructed me to obtain and forward for use in a western university. It was found that no such report existed, and I therefore prepared the one now in question. I was obliged to translate and condense the material from abstruse German treatises, etc.

Page 147, lines 12 to 16, to be corrected so as to read: "They include principally carnallite, a double chloride of potassium and magnesium, from which are derived chlorate and muriate of potash and several other important products; and kainite, a triple salt of potash, chlorine, and magnesia, which is used raw as a fertilizer and also as a crude material in the manufacture of several concentrated salts. The carnallite contains also kieserite, a natural magnesian sulphate, which is also used for agricultural purposes."

Page 149, the symbol of carnallite to read, " $\text{KCl}, \text{MgCl}_2, 6\text{H}_2\text{O}$ ."

Page 150, symbol of kainite to read, " $\text{K}_2\text{SO}_4, \text{MgSO}_4, \text{MgCl}_2, 6\text{H}_2\text{O}$ ."

Page 151, lines 32 and 33 (composition of sylvinit) to read: "It contains 22 to 30 per cent of muriate of potash, 60 per cent of common salt, and 4 to 12 per cent of sulphate of potash-magnesia."

**Exports of French Sugar.**—Under date of October 26, Consul-General Morris, of Paris, reports as follows:

Most of the French sugars which reach the United States are imported directly from England, to which country the greater part of the sugar exported from France is shipped.

The raw sugar goes via Dunkirk or Calais, and the sugars refined in this district via the River Seine, for Paris.

The following statement shows the total exportation of raw and refined sugars from France during the first nine months of the years 1892, 1893, and 1894:

Whither exported.	1892.	1893.	1894.
Raw sugar:	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>
England .....	57,736	73,002	61,549
All other countries.....	5,112	17,245	9,249
Total.....	62,848	90,247	70,798
Refined sugar:			
England.....	27,686	32,763	40,256
Total production.....	87,876	70,554	82,472

**Wheat Crop of France.**—The first paragraph on page 499 of CONSULAR REPORTS for December (No. 171), reads as follows:

The cost of production is given at 30 to 35 francs (\$5.79 to \$6.76) per hectare (\$14.31 to \$16.70 per acre); and including the provisional stacking, the cost is given at 34 to 40 francs (\$6.56 to \$7.72=\$16.21 to \$19.08 per acre).

The reductions to American currency per acre in this paragraph were made by multiplying the amount per hectare by 2.471, the number of acres in a hectare, instead of reducing the cost per hectare to the cost per acre. The paragraph should read as follows:

The cost of production is given at 30 to 35 francs (\$5.79 to \$6.76 per hectare (\$2.34 to \$2.74 per acre); including the provisional stacking, the cost is given at 34 to 40 francs (\$6.56 to \$7.72) per hectare (\$2.66 to \$3.12 per acre).

The reductions having been made in the Department, the consulate-general should not be held responsible for these errors.

**Analyses of Algerian Phosphates.**—Accompanying the report on Algerian phosphates (see CONSULAR REPORTS No. 170, p. 365), were two samples of phosphates, which were transmitted to the Department of Agriculture. On December 6, the chief clerk of that Department sent the following analyses of these samples:

*Samples.*—Serial No. A, sample from Djebel Dyr; serial No. B, sample from Inker-mann:

Analyses.	Serial number.	
	13562.	13563.
	<i>Per cent.</i>	<i>Per cent.</i>
Total phosphoric acid.....	18.53	39.21
Equivalent to tri-calcium phosphate.....	40.45	85.60

**Packing Fruit in Lime.**—At the request of the Department of Agriculture, the consul-general at Rome was instructed, on September 28, to secure a copy of an official report upon packing fruit in lime, which, it was understood, had been prepared and published by the Italian Government. The consul-general, under date of November 27, in reply to this instruction, states that the Italian Department of Agriculture has no knowledge of such a report.

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**Tobacco Duty in Venezuela.**—Consul Thomas, of La Guayra, under date of November 27, 1894, informs the Department that the Minister of Finance of Venezuela has rendered a decision permitting the importation, under the seventh class of the tariff, of tobacco known as "de hueva," and all other twisted chewing tobacco hitherto prohibited. Class 7 of the Venezuelan tariff comprises articles subject to a duty of 5 bolivars per kilogram (96½ cents per 2.2046 pounds).

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**Leyen-Leyden (erratum).**—In the translation relating to American railway securities, by Consul Germain, of Zurich, in CONSULAR REPORTS No. 165, p. 192, and in the report of Consul-General Mason, of Frankfort, on "American Railway Securities in Germany" (CONSULAR REPORTS No. 170, p. 383), the name of Dr. Alfred von der Leyden should be "Leyen," according to a communication received from Consul Germain.

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**Money in Paraguay.**—Under date of September 20, 1894, Vice-Consul Flagg, of Asuncion, reports that the pound sterling has a value of \$5 (gold) in Paraguay, and that all his statements, when given in gold values, are made out on that basis. Paraguay is not reported by the Secretary of the United States Treasury in his monthly bulletin giving values of foreign coins.

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**Australasia and the United States.**—In a letter to the Department, dated November 15, 1894, Mr. James Parkinson, mining engineer of Adelaide, South Australia, says:

It gives me great pleasure to read your Sydney consular reports. They are able and well-thought-out business reports—better than any other. \* \* \* Your people must take great interest therein and in all which concerns Australia, as I soon perceived during my professional engagements for four years (1886 to 1889) in the Northwest of the United States and the Dominion of Canada, and a few months among the commercial men of the Eastern States, who very generously evinced a marked liking for Australia and her people, making inquiries of all colonial subjects of interest, and showed a desire to visit these regions of the world if time would allow. This is now near being accomplished, and may soon be available in steamship and railway transportation of the very best kind in the world, which will doubt-



less bring with it an impetus of enterprise of great magnitude, and of wide interest generally to all people speaking the English language—the great union of expression, sentiment, thought, commercial enterprise, and civilization—to the welfare of those communities, i.e. they of English, Australian, Canadian, or American nationality. There is a greater field in the Eastern Seas for business enterprise. It means a great deal of development with a business-like people—and the push, energy, capital, and combinations for oceanic transportation on economic lines of passenger and freight traffic; and the increase of “globe trotters” of wealth, and of enterprising firms of these respective communities in the whole sphere of trade interests to aid an expansion which time will give by the quicker transit, direct or indirect, to and fro—with a lessening of freight charges. These all tend to develop a broader sentiment and development, which tend to peace, harmony, and the welfare of those who make it a point to travel and gain knowledge and pleasure.

**United States Consular Reports Reprinted Abroad.**—The British Board of Trade Journal for December, 1894, contains the following reports reprinted from CONSULAR REPORTS: On page 652, “American Railway Securities in Europe,” by Consul-General Mason, of Frankfort, reprinted from No. 170, p. 383; on page 703, “European Textile Exports,” by Consul Wamer, of Cologne, reprinted from No. 169, p. 204; on page 706, “Chicory in Belgium,” by Consul Morris, of Ghent, reprinted from No. 169, p. 157. The Board of Trade Journal also reprints (p. 706) newspaper extracts from a report upon “Wages of Labor in Luxemburg,” by Vice-Commercial Agent Murphy, which will be published in full in the February number of CONSULAR REPORTS.

**Consular Reports Transmitted to Other Departments.**—The following reports (originals or copies) were transmitted during the month of December to other Departments for publication, or for proper action thereon:

Consular officer reporting.	Date.	Subject.	Department to which referred.
Lauritz F. Bronn, Christiania...	July 24, 1894	Imports of horses, cattle, etc., into Norway.	Department of Agriculture.
Gerhard Gade, Christiania.....	Sept. 28, 1894	Imports of horses, cattle, etc., into Norway (amended report).	Do.
Wallace S. Jones, Rome.....	Nov. 24, 1894	Condition of the safety of mines and quarries in Italy (printed pamphlet).	Smithsonian Institution.
E. Schneegans, Saigon.....	Oct. 20, 1894	Rice market.....	Department of Agriculture.
Eugene Germain, Zurich.....	Nov. 24, 1894	Civil service appointments in Switzerland.	Civil Service Commission.
L. M. Shaffer, Stratford.....	Dec. 1, 1894	Agriculture.....	Department of Agriculture.
W. P. Roberts, Victoria.....	Nov. 15, 1894	Seal statistics.....	Treasury Department.
E. Schneegans, Saigon.....	Nov. 3, 1894	Rice market.....	Department of Agriculture.

## FOREIGN REPORTS AND PUBLICATIONS.

**Commercial Attaches.**—In CONSULAR REPORTS No. 171 (December, 1894), p. 565, reference was made to articles in the *Revue du Commerce Extérieur* (Review of Foreign Commerce), of Paris, concerning the discussion in administrative circles of France of the expediency of creating a new class of civil officers entitled commercial attachés, and stationing them at the embassies, legations, and chief consulates-general of France. The commercial attaché was to be independent of the Ministry of Foreign Affairs, and, consequently, not officially subordinated to the diplomatic or consular officer of the embassy or consulate, respectively, to which he was attached; nor would he require an *exequatur*, having no administrative functions. His special duties were to consist in keeping himself thoroughly informed of all economical, industrial, agricultural, and commercial conditions of the country in which he was stationed, and in bringing this information to the knowledge of the proper home ministry, which, on its part, would make use of it in the interest of French commerce. The number of November 17th of the *Revue du Commerce Extérieur* contains another article on the subject, unfavorable to the proposition. The writer aims to show the uselessness of creating these offices as a medium for increasing the foreign trade of France, and recommends to French merchants the method pursued by British and German commercial houses of sending their own special representatives abroad to investigate the possibilities of advantageous commercial operations in foreign parts. In addition, he recommends the teaching of foreign languages and of commercial geography in France, and the perfecting of technical instruction in commercial schools.

In previous articles, the *Revue du Commerce Extérieur* described the various steps which have been taken in official consideration of the subject. In its issue of October 6, it said in substance:

The creation of commercial attachés for our embassies and consulates-general was called for by French commerce before 1891. Since then, the Ministry of Commerce has given the subject attention. It is proposed to introduce the subject in Parliament and ask its vote for means to carry out this need of our commerce. Rightly, or wrongly, our merchants complain that our consuls are not skilled in commercial matters, which they neglect for diplomatic affairs.

Mr. Paul Doumer, a deputy and reporter of foreign affairs, addressed a circular to the French chambers of commerce, inviting their opinion of the creation of commercial attachés. This is complained of as an irregular and unwarranted proceeding—an encroachment on ministerial privileges.

The French Chamber of Commerce declares it is clearly opposed to commercial attachés, believing the consuls sufficient to keep the trade informed, although the trade has the serious fault of asking for reports and not reading them when published. There is considerable truth in this criticism, and in some measure, where there is a French chamber of commerce, the need of commercial attachés is possibly less felt. None exist in Germany, Austria,

Russia, and the United States, yet the commercial importance of these countries can not be ignored.

In order that commercial attachés should answer what is expected of them it is necessary to specify, (1) their recruiting, (2) the authority to which they are amenable, and (3) their duties. These attachés must especially inquire into and keep themselves informed of everything relating to the economical, industrial, agricultural, and commercial situation of the country of their residence, and make known all such information to the competent minister, who, in turn, will derive from it what is most advantageous to French commerce. The attaché can not limit himself to office work; he must be an active agent, seeing for himself, as far as possible, and visiting the centers where it is necessary to have personal information. He must study at once the import and export trade of the country where he resides; the terms on which French products can be introduced into said country and compete with the indigenous products or similar imported goods; he will likewise study commercial institutions and usages, by means of which the said country has secured an outside market. The attaché will, therefore, be especially an agent of information, but he must not be at the disposition of every merchant who applies to him. He had better centralize the information obtained at the ministry where applications may be made and answered, as he could not be equal to the task of furnishing the same intelligence to ten or twenty merchants.

Here comes in the second question—to what authority are commercial attachés amenable? Their title is in itself the answer: They are responsible to the Ministry of Commerce alone, directly, without intervention. As the attaché is not subject to an exequatur, he does not need foreign relations to be accepted by a foreign government any more than the military attachés to embassies do. A simple notification of his appointment is all that is required. If the attaché depended on foreign relations he would only be a consular agent of inferior order dependent on the consul or the ambassador; he would be at their orders and have no character in particular. This must be avoided on every account. The independence of the attaché in regard to diplomatic or consular agents is the *sine qua non* of this officer's existence.

Now comes the question, how is the recruiting of these attachés to be effected? As their powers are different from those of the consuls, evidently the attainments required of the candidates are also different, namely, commercial and industrial information, experience in business, and a certain maturity of judgment permitting them to choose well and to select only what is worth while. Pupils of commercial schools are naturally called to be candidates, but not on leaving school. A young man of 20 or 22 years of age can not well fulfill the duties of commercial attaché which are, in the highest degree, grave and delicate. Apart from theoretic knowledge, it is necessary to have experience in the practice and management of the business of a commercial house—the experience of several years. The age, too, of the attaché must also give him a certain position which can not be expected from a young man, so that before 30 years of age, a young man can not be profitably appointed a commercial attaché. We insist upon this, as there seems to be a tendency to confide this office to pupils fresh from the schools. This, we think, would compromise the success of this innovation.

We must now examine in what countries it would be well to establish these attachés. To answer the needs of the system, they should be established in regions where competition is most energetic, and where it is difficult for French merchants to inform themselves—in the East, in South America, in China, and in Japan. This does not mean these attachés would be useless in Europe. No doubt, merchants are better able to know what is taking place in England and Germany, but there are questions of a more general description that it is sometimes difficult to answer correctly. For instance, our exporters thought we could do nothing in Germany; they claimed that our market was flooded with German products, while we sold nothing to our neighbors, whereas the balance is about equal between the two countries, and is sometimes in our favor. Thus, we should not regret to see a commercial attaché appointed to the embassies of Berlin and Vienna—cities moreover where we have no consul.

On the whole, if we were to admit the principal of creating commercial attachés, it would be on condition that they must depend upon and correspond with the Ministry of Commerce

alone; that they must be recruited from former merchants, and that their duties be precisely limited to inquiry, study (or observation), and information. The attempt is to be made; but, on their side, our exporters will be obliged to take the initiative and not to think the appointment of new agents will exempt them from their efforts or permit them to leave to the Government the care of increasing their business.

A review of changes which have been made in the consular and commercial branches of the diplomatic services of Great Britain, Belgium, and France during the past ten years was submitted to the Department by Stephen Bonsal, esq., secretary of legation at Madrid, and published under the title, "Commercial Reports to European Governments" in *CONSULAR REPORTS* No. 166 (July, 1894), p. 451. Mr. Bonsal states that Great Britain has commercial attachés at Paris and St. Petersburg, and that the appointment of at least one commercial attaché for every important legation has been strongly urged. In the same number (p. 458), under the heading "German Consuls and German Trade," will be found a report from Commercial Agent Stern on the recent efforts of the German Government to increase foreign trade by the establishment of bureaus of information at commercial centers under the supervision of consular officers.

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**Natal Wools for the United States.**—The British Trade Journal for October, 1894, publishes an article under the heading, "The Outlook for Natal Wools," in which it says:

The alteration in the tariff of the United States, which has placed wool on the list of free entry, will no doubt have a very important bearing on sheep farming and the growth of wool in all parts of the world. The Australian colonies will be the largest gainers, and will probably before very long export considerable quantities of wool to the United States, and there does not appear to be any reason why many of the other British colonies should not share in the increased demand, because the range of wool employed in the United States is very wide, and will probably be wider now that the duty on wool is removed. Some of the colonies appear to be going backward instead of forward, and although sheep farming is one of the most important industries the production of wool has decreased within the last few years, instead of increased. The low price of wool in the English and Continental markets may have something to do with this, because in those colonies where internal communications are not so good as in some others, they are necessarily placed at a disadvantage in the competition for trade, as the profit of the farmer is the net result which he has in hand after paying all expenses, including carriage, and, although the farmer might sell on the spot, yet the buyer takes into consideration the carriage which has to be paid to the point where it is to be used. Among the colonies whose growth of wool has decreased, Natal stands conspicuous, as the weight of wool which was exported in 1890 and 1891 was 27,307,200 pounds, whereas, in the next year, it had fallen to 22,966,656 pounds, and last year, although there was a slight increase, viz, 24,067,019 pounds, still this is not as it should be, as many other colonies have during the same time largely increased their exports. Natal, like all other of the South African colonies, has agriculture as its staple industry, and it will be a very long time before either mining or manufacturing can occupy a very important place.

The colony itself is very well fitted, both by geographical position and natural advantages, to become one of the largest woolgrowing countries of the world. Along the coast, for about 25 to 30 miles inland, the land is suitable for the cultivation of tropical and semitropical produce, such as tea, sugar, and fruit, and is for the most part well watered and wooded.

The land here, also, from the nature of the soil, is well calculated for the growth of all kinds of ordinary farm and garden produce except cereals. Behind these coast lands, gradually rising upwards from the sea, there is a wide stretch of country termed the "midland districts," where the rich, loamy and clay soils enable all kinds of cereals and root crops to be grown, and this district also presents a splendid grazing ground for stock. Behind this, still advancing inland, we come to a more hilly and mountainous district, which forms by far the largest portion of the colony. The country here is for the most part bare of trees, but it is fairly well watered, and in spring covered with thick, green pasture. No doubt, in the course of years, extensive plantations of trees, the commencement of which has already taken place, will give a greater diversity to the landscape and give more shaded pasturage. The whole of this district, however, is admirably adapted for sheep farming, and there is no reason why Natal should not in the future take a very important position among the woolgrowing countries of the world; and, indeed, the samples of wool grown in this country which were exhibited in the Indian and Colonial Exhibition in 1886, and which were for the most part pure or part bred merinos, were excellent samples of this class of wool, and bear a very favorable comparison with any of the wools which were exhibited from South Africa.

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**The Franco-Swiss Tariff War.**—With reference to the efforts to put an end to the tariff war between France and Switzerland, the *Revue du Commerce Extérieur* (Review of Foreign Commerce), of Paris, in its issue of October 6, quotes M. Droz, one of the Swiss delegates at the fêtes of Mâcon, as saying, in explanation of a speech made by him:

I did not mean to say that Switzerland should make more concessions or ask less than in 1892, but that the articles on which we could ask or make concessions would perhaps be different.

The *Revue* regards M. Droz's remarks as indicative of a desire on the part of the Swiss people for a reconciliation with France, and recommends the appointment of commissions in France and Switzerland to study the subject of the tariff relations of the two countries. The *Revue* adds that the "moderate protectionists" in France "never had the intention of provoking the vexatious war of tariffs so hurtful to the interests of the two European republics." In a previous issue (September 22), the *Revue* stated that "one single country, last year, diminished its purchases in the French market by 55,000,000 [francs].\* As it was not due to any political or economic or financial catastrophe, this enormous loss must be the result of an exceptional situation, and this situation is the consequence of the tariff war between France and Switzerland which broke out in 1893," upon "the unfortunate rejection of the convention project elaborated in 1892." The *Revue* adds:

Neither the Federal Government, nor, on the other hand, Swiss public opinion, understood the motives which brought about the rejection of Jules Roche's project. They imagined that France gave deliberate proof of contempt for them, and had seriously attacked the independence of the Swiss customs. Imbued with these false ideas, our neighbors believed themselves to be insulted, and acted accordingly. Hence the policy of reprisals and the abuses which followed. Both nations suffer by the war. In France, an association has been

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\* \$10,615,000.

formed to bring about an approach to closer commercial intercourse. Their efforts are to be applauded, for there is no antagonism between the interests of the two nations. Rather the contrary may be asserted. Certain of their industries are cooperative. Those that are rivals do not represent the preponderating interests on both sides of the Jura. A false commercial idea, a doctrinal prejudice of France, provoked the disagreement. A false interpretation by Switzerland led to the tariff war. The errors committed hinder both countries. They must be dissipated on both sides of the Jura to restore peace.

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**Commercial Taxation in Russia.**—According to the British Board of Trade Journal for December, 1894, the Russian newspapers "have been devoting considerable attention to the contemplated adjustment of industrial and commercial taxation, the incidence of which has hitherto been very unequal. It is asserted that the present legislation presses heavily on the smaller industries. In order to put an end to this anomaly, M. Kovalovsky, director of the department of commerce and manufactures in the Ministry of Finance, has been intrusted with the duty of drawing up a new tariff of industrial and commercial taxes to be leviable in industrial enterprises of every kind." It is stated that the tax will be levied on the number of workmen in establishments in which manual labor predominates, and on that of the indicators of the steam machines and the dimensions of the plant where machine labor is of the first importance. Certain privileges will be granted to the smaller enterprises. At present, the tax on merchants is said to discriminate against small traders, and to encourage illicit speculation on the part of large ones. The proposed law, however, will deal only with industrial taxation.

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**The New French Colonial Department.**—The British Board of Trade Journal for December publishes extracts from a circular addressed to the officers administering the colonial possessions of France by M. Delcassé, Minister for the Colonies, in which M. Delcassé says:

The creation of a department of commercial information and colonization has been warmly welcomed by public opinion, and home trade is expecting to benefit largely by this innovation—a benefit which will also be shared in by the colonies. Its success, however, depends very largely upon your efforts. It is from you, almost exclusively, that all the information must be obtained. It is to you that applications will be made either to supplement or to complete the collections of native products and articles of European exportation which appear in the permanent exhibition, or to supply such information as may be needed respecting the commercial, industrial, and agricultural condition of the colony over which you preside.

The new department will have to depend largely upon your good offices for particulars which may be required by intending emigrants to your colony on the openings that may exist for them there, the conditions of the establishment of Europeans, and the measure of assistance that may be looked for from you. You will also be referred to in connection with applications that may be made to the home Government by persons desirous of emigrating, and especially with a view of bringing under the notice of employers of labor in your colony applications for work made by persons willing to emigrate. In return, you may consider the department of commercial information and colonization as the proper channel in the mother

country for the dissemination of information respecting the resources and requirements of the colony administered by you.

The decree establishing this new department provides for the creation in each colony of an information bureau, and it is desired that your views on the subject of carrying the proposal into effect may be received at an early period. This bureau, it must be borne in mind, should be constituted in as simple and economical a manner as possible. One or more of the officials belonging to the staff of the home or colonial administrations, or the customs, should be intrusted with the duty of collecting all necessary statistical data so as to be in a position to reply when information is sought.

Side by side with the information bureau placed under your charge, the chambers of commerce and agriculture will be the natural auxiliaries of the service of commercial information and colonization, and you are requested to state how and to what extent it would, in your opinion, be useful to associate them with the work of the information bureau.

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**New Railroads in Foreign Countries.**—The British Board of Trade Journal for December contains information as to various railroad enterprises in foreign countries. The British ambassador at Madrid has transmitted an extract from the *Imparcial*, stating that the delegates of the French and Spanish governments are reported to have determined upon the text of the convention notifying the preliminary bases of a previous understanding arrived at between the two countries for the construction of the Transpyrenean railways. The two international lines which are about to be constructed will cross the joint frontier at the points of Salau and Sempert. The first will start from Saint Girons (Ariege), and ascending the valley of Salat, will enter Spain by the Eastern de Anem, and will terminate at Lérida. The second will start from Olorón (Lower Pyrénées), and, passing through the valley of Aspe, will join the Barcelona and Saragossa line at Zuera. The two tunnels will be from 7 to 8 kilometers long (4.64 to 4.97 miles). At each of the two entrances, there shall be an international station. The whole of the Olorón line commenced in Spain shall be terminated within a period of five years, and the time of duration for the whole of the works for either side shall be ten years, counting from the date of the ratification of the convention, which shall be submitted to Parliament after the proximate definitive agreement.

Mr. R. Drummond Hay, British consul-general at Tunis, in a report to the Foreign Office, dated the 1st of November, states that the railway from Djedeida to Biserta has been completed, and that communication from Tunis to that port was opened up on that date.

The *Revue d'Orient*, in its issue for the 20th of November, states that the Turkish Ministry of Public Works has received from M. William Sola an application for a concession for works to make the Euphrates navigable from Meskené to Bagdad, where this river will be connected with the Tigris either by a canal traversing the town or by a steam tramway. This concession will also include the establishment of a railway starting from

Meskené and terminating at the port of Alexandretta, so as also to create direct communication between the Persian Gulf and the Mediterranean, across Mesopotamia and the valley of the Euphrates. The Minister of Public Works has approved the proposal, and has transmitted it to the Seraskierat (War Office) in order to have its opinion from a strategic point of view. Mr. Sola is supported by a Franco-Belgian group, and does not demand any kind of guaranty in order to finish his enterprise.

According to the Bulletin du Musée Commercial, the Government of the principality of Bulgaria has decided to construct a railway running from Koulakly to Slivno, and connecting that town with the Yamboli-Bourgas line. It is estimated that the construction of this line will not cost more than £48,000 (\$233,592).

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**British Trade During 1893.**—The London and China Telegraph of December 17, 1894, commenting upon the British trade and navigation returns for November says:

The imports from Egypt have increased, but from the United States and India shipments have been on a smaller scale. \* \* \* For the eleven months the imports have aggregated £375,435,000 [\$1,827,054,425], an increase of £7,105,000 [\$34,576,482], or 1.9 per cent. The exports of the past month show a gain of 2.4 per cent, the aggregate of £18,083,000 [\$88,000,919] being £429,000 [\$2,087,728] in excess of the figures of last year. The most satisfactory feature is an increase of £266,000 [\$1,265,290] in metals, mostly iron and its manufactures. The increase is fairly well distributed throughout the list, the United States being the best customers. For the eleven months the exports have aggregated £198,694,000 [\$966,944,351], a decrease of £2,534,000 [\$12,331,711], or 1.2 per cent.

\* \* \* \* \*

With regard to the details of our trade with the Far East, there is a large falling off in the quantity of cotton yarn sent to both China and Japan last month. Taking the eleven months, however, China shows an increase, but Japan, on the other hand, exhibits a considerable shrinkage. The Straits Settlements show large increases both for the month and eleven months. Taking the total trade in all kinds of piece goods the Dutch East Indies, Japan, and the Straits Settlements all show improvement for the month, while the figures for China and the Philippine Islands compare unfavorably with November last year. For the eleven months, the figures are satisfactory all round with the exception of the Philippine Islands, which show a decrease of over 8,000,000 yards. The export of linen manufactures to the Philippine Islands has increased during the last few months, and the total for the eleven months is not far short of what it was in the corresponding period of last year. The figures relating to woollen and worsted tissues come out badly both for China and Japan. In metals, we may note a marked increase in the export of cast and wrought iron to Japan, and also a notable increase in the shipments of mixed and yellow metal to China. Turning to imports there is a small increase for the month in the quantity of tea imported from China, but for the eleven months there is a decrease amounting to over 13,000,000 pounds. The silk shipments both from China and Japan show a large shrinkage. The imports of sugar from Java and the Philippine Islands were larger last month, but taking the eleven months there is a large decrease in the shipments from both places. Hemp shipments from the Philippine Islands show an increase both for the month and eleven months. The quantity of tin from the Straits Settlements fell off slightly last month, but the returns for the eleven months show an increase of nearly 100,000 tons.



**Tariff Changes.**—In its summary of recent tariff changes and customs regulations, the British Board of Trade Journal for December quotes a decree published in the *Journal Officiel*, of Paris, for November 15, by which the French Government raises the duty on raisins, figs, and dates intended exclusively for distilling purposes or wine making to 25 francs per 100 kilograms (\$4.82 per 220.46 pounds). The former duty was as follows: Figs—maximum, \$1.16; minimum, 38.6 cents per 100 kilograms; raisins—maximum, \$4.82½; minimum, \$2.89½ per 100 kilograms; dates (other fruits)—maximum, \$2.89½; minimum, 96½ cents per 100 kilograms. Another decree, published November 18, provides that molasses imported from abroad is in future to be subjected to a duty of 10 centimes (1.93 cents) per degree of absolute saccharine richness. A circular of the French customs authorities, issued October 15, prescribes that pneumatic tires and bands of rubber used for covering bicycle and tricycle wheels are dutiable under category 614 at the rate of 220 francs per 100 kilograms (\$42.46 per 220.46 pounds). Italy, according to the British *chargé d'affaires* at Rome, has classified "hoops" for cycle wheels as coming within a category for which the duty is 13 lire per quintal (\$2.51 per 220.46 pounds). The Italian Government has increased the import duties upon cotton in the Erythrean colony (Abyssinia) from the old Egyptian rate of 8 per cent to 15 per cent ad valorem. The object is to encourage the importation of cotton from Italy. India and England have hitherto furnished the supply, the imports for 1893 amounting in value to £2,292,500 (\$11,156,447). Since the conquest of Kassala, says the British Board of Trade Journal, "it is anticipated that the increase in the trade in cotton and cotton tissues will show a great development, either by the improvement in the well-being of the population or by the security of ways of communication with the interior or by colonial expansion not only toward Abyssinia, but also toward the Soudan."

In a dispatch to the Foreign Office, dated the 20th of October, Mr. P. le Poer Trench, British minister at Tokio (see British Board of Trade Journal, December 1, 1894, p. 686), transmits a translation of a note received from Viscount Mutsu, from which it appears that, dating from the 15th of October, the exchange value of the silver bu (\$15.75) was to be calculated at 31 sen 5 rin (\$15.75) when duties were levied upon imports and exports, and that from the same date, payment of duties in silver bu were not to be received.

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Full directions for binding the Consular Reports are given in No.  
131, page 663.

## VALUES OF FOREIGN COINS.

The following statements show the valuation of foreign coins, as given by the Director of the United States Mint and published by the Secretary of the Treasury, in compliance with the first section of the act of March 3, 1873, viz: "That the value of foreign coins, as expressed in the money of account of the United States, shall be that of the pure metal of such coin of standard value," and that "the value of the standard coins in circulation of the various nations of the world shall be estimated annually by the Director of the Mint, and be proclaimed on the 1st day of January by the Secretary of the Treasury."

In compliance with the foregoing provisions of law, annual statements were issued by the Treasury Department, beginning with that issued on January 1, 1874, and ending with that issued on January 1, 1890. Since that date, in compliance with the act of October 1, 1890, these valuation statements have been issued quarterly, beginning with the statement issued on January 1, 1891.

These estimates "are to be taken (by customs officers) in computing the value of all foreign merchandise made out in any of said currencies, imported into the United States."

The following statements, running from January 1, 1874, to April 1, 1894, have been prepared to assist in computing the proper values in American money of the trade, prices, values, wages, etc., of and in foreign countries, as given in consular and other reports. The series of years are given so that computations may be made for each year in the proper money values of such year. In hurried computations, the reductions of foreign currencies into American currency, no matter for how many years, are too often made on the bases of latest valuations. When it is taken into account that the ruble of Russia, for instance, has fluctuated from 77.17 cents in 1874 to 37.2 cents in April, 1894, such computations are wholly misleading. All computations of values, trade, wages, prices, etc., of and in the "fluctuating-currency countries" should be made in the values of their currencies in each year up to and including 1890, and in the quarterly valuations thereafter.

To meet typographical requirements, the quotations for the years 1876, 1877, 1879, 1881, and 1882 are omitted, these years being selected as showing the least fluctuations when compared with years immediately preceding and following.

To save unnecessary repetition, the estimates of valuations are divided into three classes, viz: (A) countries with fixed currencies, (B) countries with fluctuating currencies, and (C) quarterly valuations of fluctuating currencies.

*A.—Countries with fixed currencies.*

Countries.	Standard.	Monetary unit.	Value in terms of United States gold.	Coins.
Argentine Republic*.....	Gold and silver...	Peso.....	\$0.96, 5	Gold—Argentine (\$4.82, 4) and $\frac{1}{2}$ Argentine; silver—peso and divisions.
Austria-Hungary†.....	Gold.....	Crown.....	.20, 3	Gold—20 crowns (\$4.05, 2) and 10 crowns.
Belgium.....	Gold and silver...	Franc.....	.19, 3	Gold—10 and 20 franc pieces; silver—5 francs.
Brazil.....	Gold.....	Milreis.....	.54, 6	Gold—5, 10, and 20 milreis; silver— $\frac{1}{2}$ , 1, and 2 milreis.
British North America (except Newfoundland)).	do.....	Dollar.....	1.00	
Chile‡.....	Gold and silver...	Peso.....	.91, 2	Gold—escudo (\$1.82, 4), doubloon (\$4.56, 1), and condor (\$9.12, 8); silver—peso and divisions.
Cuba.....	do.....	do.....	.92, 6	Gold—doubloon (\$5.01, 7); silver—peso.
Denmark.....	Gold.....	Crown.....	.26, 8	Gold—10 and 20 crowns.
Egypt.....	do.....	Pound (100 piasters).	4.94, 3	Gold—10, 20, 50, and 100 piasters; silver—1, 2, 10, and 20 piasters.
Finland.....	do.....	Mark.....	.19, 3	Gold—10 and 20 marks (\$1.93 and \$3.85, 9).
France.....	Gold and silver...	Franc.....	.19, 3	Gold—5, 10, 20, 50, and 100 francs; silver—5 francs.
Germany.....	Gold.....	Mark.....	.23, 8	Gold—5, 10, and 20 marks.
Great Britain.....	do.....	Pound sterling...	4.86, 6 $\frac{1}{2}$	Gold—sovereign (pound sterling) and half sovereign.
Greece.....	Gold and silver...	Drachma.....	.19, 3	Gold—5, 10, 20, 50, and 100 drachmas; silver—5 drachmas.
Haiti.....	do.....	Gourde.....	.96, 5	Silver—gourde.
Italy.....	do.....	Lira.....	.19, 3	Gold—5, 10, 20, 50, and 100 lire; silver—5 lire.
Liberia.....	Gold.....	Dollar.....	1.00	
Netherlands§.....	Gold and silver...	Florin.....	.40, 2	Gold—10 florins; silver— $\frac{1}{2}$ , 1, and 2 $\frac{1}{2}$ florins.
Newfoundland.....	Gold.....	Dollar.....	1.01, 4	Gold—2 (\$2.02, 7).
Portugal.....	Gold.....	Milreis.....	1.08	Gold—1, 2, 5, and 10 milreis.
Spain.....	Gold and silver...	Peseta.....	.19, 3	Gold—25 pesetas; silver—5 pesetas.
Sweden and Norway...	Gold.....	Crown.....	.26, 8	Gold—10 and 20 crowns.
Switzerland.....	Gold and silver...	Franc.....	.19, 3	Gold—5, 10, 20, 50, and 100 francs; silver—5 francs.
Turkey.....	Gold.....	Piaster.....	.04, 4	Gold—25, 50, 100, 200, and 500 piasters.
Venezuela.....	Gold and silver...	Bolivar.....	.19, 3	Gold—5, 10, 20, 50, and 100 bolivars; silver—5 bolivars.

\* In 1874 and 1875 the gold standard prevailed in the Argentine Republic. Its currency does not appear in the statements again until 1883, when the double standard prevailed, and the peso attained a fixed value of 96 5 cents.

† On reference to the table of "fluctuating currencies," it will be seen that Austria had the silver standard up to and including the quarter ending July 1, 1892. The next quarter (October 1) inaugurated the gold standard (see note under table of "fluctuating currencies").

‡ The gold standard prevailed in Chile until January 1, 1890. The value of the peso has been the same under both standards.

§ The Netherlands florin, as will be seen in the "fluctuating" table, became fixed in value (40.2 cents) in 1880.



## B.—Countries with fluctuating currencies, 1874-'90.

Countries.	Standard.	Monetary unit.	Value in terms of the United States gold dollar on January 1—					
			1874.	1875.	1878.	1880.	1883.	1884.
Austria-Hungary*	Silver.....	Florin.....	\$0.47,6	\$0.45,3	\$0.45,3	\$0.47,3	\$0.40,1	\$0.39,8
Bolivia.....	do.....	Dollar until 1880; boliviano thereafter.	.96,5	.96,5	.96,5	.83,6	.81,2	.80,6
Central America.....	do.....	Peso.....	.96,5	.91,8	.91,8	.83,6		
China.....	Silver.....	Haikwan tael...	1.61	1.61				
Colombia.....	do.....	Peso.....	.96,5	.96,5	.96,5	.83,6	.81,2	.80,6
Ecuador.....	do.....	do.....	.96,5	.91,8	.91,8	.83,6	.81,2	.80,6
Egypt†.....	Gold.....	Pound (100 piasters).			4.97,4	4.97,4	4.90	4.90
India.....	Silver.....	Rupee.....	.45,8	.43,6	.43,6	.39,7	.38,6	.38,3
Japan.....	{ Gold..... Silver..... }	{ Yen..... Yen..... }	{ .99,7 .99,7 }	{ .99,7 .99,7 }	{ .99,7 .99,7 }	{ .99,7 .99,7 }	.87,6	.86,9
Mexico.....	do.....	Dollar.....	1.04,7‡	.99,8	.99,8	.90,9	.88,2	.87,5
Netherlands‡.....	Gold and silver.....	Florin.....	.40,5	.38,5	.38,5	.40,2		
Peru.....	Silver.....	Sol.....	.92,5	.91,8	.91,8	.83,6	.81,2	.80,6
Russia.....	do.....	Ruble.....	77,17	73,4	73,4	.66,9	.65	.64,5
Tripoli.....	do.....	Mahbub of 20 piasters.	87,09	.82,9	.82,9	.74,8	.73,3	.72,7

Countries.	Standard.	Monetary unit.	Value in terms of the United States gold dollar on January 1—					
			1885.	1886.	1887.	1888.	1889.	1890.
Austria-Hungary*	Silver.....	Florin.....	\$0.39,3	\$0.37,1	\$0.35,9	\$0.34,5	\$0.33,6	\$0.42
Bolivia.....	do.....	Dollar until 1880; boliviano thereafter.	.79,5	.75,1	.72,7	.69,9	.68	.85
Central America.....	do.....	Peso.....				.69,9	.68	.85
Colombia.....	do.....	do.....	.79,5	.75,1	.72,7	.69,9	.68	.85
Ecuador.....	do.....	do.....	.79,5	.75,1	.72,7	.69,9	.68	.85
Egypt†.....	Gold.....	Pound (100 piasters).	4.90	4.90	4.94,3	4.94,3	4.94,3	4.93,3
India.....	Silver.....	Rupee.....	.37,8	.35,7	.34,6	.33,2	.32,3	.40,4
Japan.....	{ Gold..... Silver..... }	{ Yen..... Yen..... }	{ .85,8 .85,8 }	{ .81 .81 }	{ .99,7 .99,7 }	{ .99,7 .99,7 }	{ .99,7 .99,7 }	{ .99,7 .99,7 }
Mexico.....	do.....	Dollar.....	.86,4	.81,6	.79	.75,9	.73,9	.92,3
Peru.....	Silver.....	Sol.....	.79,5	.75,1	.72,7	.69,9	.68	.85
Russia.....	do.....	Ruble.....	.63,6	.60,1	.58,2	.55,9	.54,4	.68
Tripoli.....	do.....	Mahbub of 20 piasters.	.71,7	.67,7	.65,6	.63	.61,4	.76,7

\* The silver standard prevailed in Austria-Hungary up to 1832. The law of August 2 of that year (see CONSULAR REPORTS, No. 147, p. 623) established the gold standard.

† The Egyptian pound became fixed in value at \$4.94,3 in 1887.

‡ The Netherlands florin fluctuated up to the year 1880, when it became fixed at 40.2 cents.

*C.—Quarterly valuations of fluctuating currencies, 1891-'94.*

Countries.	Monetary unit.	1891.				1892.			
		Jan. 1.	April 1.	July 1.	Oct. 1.	Jan. 1.	April 1.	July 1.	Oct. 1.
Austria-Hungary *	{ Gold crown.....								\$0.20,3
	{ Silver florin....	\$0.38,1	\$0.36,3	\$0.36,3	\$0.35,7	\$0.34,1	\$0.32,8	\$0.32	
Bolivia.....	Silver boliviano	.77,1	.73,5	.73,6	.72,3	.69,1	.66,5	.64,9	.61,6
Central America...	Silver peso.....	.77,1	.73,5	.73,6	.72,3	.69,1	.66,5	.64,9	.61,6
China†.....	{ Shanghai tael.	1.13,9	1.08,5	1.08,7	1.06,8	1.02,1	.98,2	.95,8	.92
	{ Haikwan tael.	1.27	1.20,9	1.21	1.18,9	1.13,7	1.09,3	1.06,7	1.01,3
Colombia.....	Silver peso.....	.77,1	.73,5	.73,6	.72,3	.69,1	.66,5	.64,9	.61,6
Ecuador.....	do.....	.77,1	.73,5	.73,6	.72,3	.69,1	.66,5	.64,9	.61,6
India.....	Silver rupee.....	.36,6	.34,9	.35	.34,3	.32,8	.31,6	.30,8	.29,3
Japan‡.....	Silver yen.....	.83,1	.79,2	.79,3	.77,9	.74,5	.71,6	.69,9	.66,4
Mexico.....	Silver dollar.....	.83,7	.80	.80	.78,5	.75	.72,2	.70,4	.66,9
Peru.....	Silver sol.....	.77,1	.73,5	.73,6	.72,3	.69,1	.66,5	.64,9	.61,6
Russia§.....	Silver ruble.....	.61,7	.58,8	.58,8	.57,8	.55,3	.53,1	.51,9	.49,2
Tripoli.....	Silver mahbub.....	.69,5	.66,3	.66,4	.65,2	.62,3	.60	.58,5	.55,5
Venezuela ¶.....	Silver bolivar.....	.15,4	.14,7	.14,7	.14,5	.13,8	.13,3	.13	.12,3

Countries.	Monetary unit.	1893.				1894.			Jan. 1, 1895.
		Jan. 1.	April 1.	July 1.	Oct. 1.	Jan. 1.	April 1.	Oct. 1.	
Bolivia.....	Silver boliviano	\$0.61,3	\$0.61	\$0.60,4	\$0.53,1	\$0.51,6	\$0.46,5	\$0.46,4	\$0.45,5
Central America....	Silver peso.....	.61,3	.61	.60,4	.53,1	.51,6	.46,5	.46,4	.45,5
	{ Shanghai tael.	90,6	90,1	.89,2	.78,4	.76,2	.68,6	.68,5	67,3
China†.....	{ Haikwan tael.	1.01	1.00,4	.99,4	.87,4	.84,9	.76,5	.76,3	74,9
	{ Tien-Tsin tael.							.72,7	.71,4
	{ Chefoo tael.							.71,7	.70,4
Colombia.....	Silver peso.....	.61,3	.61	.60,4	.53,1	.51,6	.46,5	.46,4	.45,5
Ecuador.....	do.....	.61,3	.61	.60,4	.53,1	.51,6	.46,5	.46,4	.45,5
India.....	Silver rupee.....	.29,2	.29	.28,7	.25,2	.24,5	.22,1	.22	.21,6
Japan‡.....	Silver yen.....	.66,1	.65,8	.65,1	.57,3	.55,6	.50,1	.50	.49,1
Mexico.....	Silver dollar.....	.66,6	.66,2	.65,6	.57,7	.56	.50,5	.50,4	.49,5
Peru.....	Silver sol.....	.61,3	.61	.60,4	.53,1	.51,6	.46,5	.46,4	.45,5
Russia§.....	Silver ruble.....	.49,1	.48,8	.48,3	.42,5	.41,3	.37,2	.37,1	.36,4
Tripoli.....	Silver mahbub.....	.55,3	.55	.54,5	.47,9	.46,5	.41,9	.41,8	.41,1

\* Austria-Hungary had the silver standard up to August, 1892 (see note to "fluctuating" table B).

† China (silver). The Haikwan tael is the customs tael, and the Shanghai tael that used in trade. Consul-General Denny (CONSULAR REPORTS No. 43, p. 516) says: "The value of the tael varies in the different parts of China, and every port has two taels, one being the Government, or Haikwan, tael, in which all duties have to be paid, and the other the market tael, the former exceeding the latter by some 11 per cent."

‡ Gold is the nominal standard in Japan, but silver is practically the standard. The fixed value of the gold yen is 99.7 cents.

§ The gold ruble is valued at 77.2 cents. Silver is the nominal standard, but paper is the actual currency, and its depreciation is measured by the gold standard.

¶ The Venezuelan bolivar became fixed in value (19.3 cents) on January 1, 1892.

## FOREIGN WEIGHTS AND MEASURES.

The following table embraces only such weights and measures as are given from time to time in CONSULAR REPORTS and in Commercial Relations:

*Foreign weights and measures, with American equivalents.*

Denominations.	Where used.	American equivalent.
Almude.....	Portugal.....	4.422 gallons.
Ardeb.....	Egypt.....	7.6907 bushels.
Are.....	Metric.....	0.02471 acre.
Arrobe.....	Paraguay.....	25 pounds.
Arratel or libra.....	Portugal.....	1.011 pounds.
Arroba (dry).....	Argentine Republic.....	25.3175 pounds.
Do.....	Brazil.....	32.38 pounds.
Do.....	Cuba.....	25.3664 pounds.
Do.....	Portugal.....	32.38 pounds.
Do.....	Spain.....	25.36 pounds.
Do.....	Venezuela.....	25.4024 pounds.
Arroba (liquid).....	Cuba, Spain, and Venezuela.....	4.263 gallons.
Arshine.....	Russia.....	28 inches.
Arshine (square).....	do.....	5.44 square feet.
Artel.....	Morocco.....	1.12 pounds.
Baril.....	Argentine Republic and Mexico.....	20.0787 gallons.
Barrel.....	Malta (customs).....	11.4 gallons.
Do.....	Spain (raisins).....	100 pounds.
Berkovet.....	Russia.....	361.12 pounds.
Bongkal.....	India.....	832 grains.
Bonw.....	Sumatra.....	7,096.5 square meters.
Bu.....	Japan.....	0.1 inch.
Butt (wine).....	Spain.....	140 gallons.
Caffiso.....	Malta.....	5.4 gallons.
Candy.....	India (Bombay).....	529 pounds.
Do.....	India (Madras).....	500 pounds.
Cantar.....	Morocco.....	113 pounds.
Do.....	Syria (Damascus).....	575 pounds.
Do.....	Turkey.....	124.7036 pounds.
Cantaro (Cantar).....	Malta.....	175 pounds.
Carga.....	Mexico and Salvador.....	300 pounds.
Catty.....	China.....	1.333½ (1½) pounds.
Do.....	Japan.....	1.31 pounds.
Do.....	Java, Siam, Malacca.....	1.35 pounds.
Do.....	Sumatra.....	2.12 pounds.
Centaro.....	Central America.....	4.2631 gallons.
Centner.....	Bremen and Brunswick.....	117.5 pounds.
Do.....	Darmstadt.....	110.24 pounds.
Do.....	Denmark and Norway.....	110.11 pounds.
Do.....	Nuremberg.....	112.43 pounds.
Do.....	Prussia.....	113.44 pounds.
Do.....	Sweden.....	93.7 pounds.
Do.....	Vienna.....	123.5 pounds.
Do.....	Zollverein.....	110.24 pounds.
Do.....	Double or metric.....	220.46 pounds.
Chih.....	China.....	14 inches.
Coyan.....	Sarawak.....	3,098 pounds.
Do.....	Siam (Koyan).....	3,667 pounds.

*Foreign weights and measures, with American equivalents. Continued.*

Denominations.	Where used.	American equivalent.
Cuadra.....	Argentine Republic.....	4 2 acres.
Do.....	Paraguay.....	78.9 yards.
Do.....	Paraguay (square).....	8.077 square feet.
Do.....	Uruguay.....	Nearly 2 acres.
Cubic meter.....	Metric.....	35.3 cubic feet.
Cwt. (hundredweight).....	British.....	112 pounds.
Desiatine.....	Russia.....	2.6997 acres.
Do.....	Spain.....	1.599 bushels.
Drachme.....	Greece.....	Half ounce.
Dun.....	Japan.....	1 inch.
Egyptian weights and measures.....	(See CONSULAR REPORTS No. 144.)	
Fanega (dry).....	Central America.....	1.5745 bushels.
Do.....	Chile.....	2.575 bushels.
Do.....	Cuba.....	1.599 bushels.
Do.....	Mexico.....	1.54728 bushels.
Do.....	Morocco.....	Strike fanega, 70 lbs. full fanega, 118 lbs.
Do.....	Uruguay (double).....	7.776 bushels.
Do.....	Uruguay (single).....	3.888 bushels.
Do.....	Venezuela.....	1.599 bushels.
Fanega (liquid).....	Spain.....	16 gallons.
Faddan.....	Egypt.....	1.03 acres.
Frail (raisins).....	Spain.....	50 pounds.
Frasco.....	Argentine Republic.....	2.5096 quarts.
Do.....	Mexico.....	2.5 quarts.
Fuder.....	Luxemburg.....	264.17 gallons.
Garnice.....	Russian Poland.....	0.88 gallon.
Gram.....	Metric.....	15.432 grains.
Hectare.....	do.....	2.471 acres.
Hectoliter:		
Dry.....	do.....	2.838 bushels.
Liquid.....	do.....	26.417 gallons.
Joch.....	Austria-Hungary.....	1.422 acres.
Ken.....	Japan.....	4 yards.
Kilogram (kilo).....	Metric.....	2.2046 pounds.
Kilometer.....	do.....	0.621370 mile.
Klafter.....	Russia.....	216 cubic feet.
Kota.....	Japan.....	5.13 bushels.
Korree.....	Russia.....	3.5 bushels.
Last.....	Belgium and Holland.....	85.134 bushels.
Do.....	England (dry malt).....	82.52 bushels.
Do.....	Germany.....	2 metric tons (4,480 pounds).
Do.....	Prussia.....	112.29 bushels.
Do.....	Russian Poland.....	113½ bushels.
Do.....	Spain (salt).....	4,760 pounds.
League (land).....	Paraguay.....	4,633 acres.
Li.....	China.....	2.115 feet.
Libra (pound).....	Castilian.....	7,100 grains (troy).
Do.....	Argentine Republic.....	1.0127 pounds.
Do.....	Central America.....	1.043 pounds.
Do.....	Chile.....	1.014 pounds.
Do.....	Cuba.....	1.0161 pounds.
Do.....	Mexico.....	1.01465 pounds.
Do.....	Peru.....	1.0143 pounds.
Do.....	Portugal.....	1.011 pounds.
Do.....	Uruguay.....	1.0143 pounds.
Do.....	Venezuela.....	1.0161 pounds.
Liter.....	Metric.....	1.0567 quarts.
Livre (pound).....	Greece.....	1.1 pounds.
Do.....	Guiana.....	1.0791 pounds.

*Foreign weights and measures, with American equivalents—Continued.*

Denominations.	Where used.	American equivalent.
Load.....	England (timber).....	Square, 50 cubic feet; unhewn, 40 cubic feet; inch planks, 600 super- ficial feet.
Manzana .....	Costa Rica.....	1½ acres.
Marc.....	Bolivia.....	0.507 pound.
Maund.....	India.....	82½ pounds.
Meter.....	Metric .....	39.37 inches.
Mil.....	Denmark.....	4.68 miles.
Do.....	Denmark (geographical).....	4.61 miles.
Morgen.....	Prussia.....	0.63 acre.
Oke.....	Egypt.....	2.7225 pounds.
Do.....	Greece.....	2.84 pounds.
Do.....	Hungary.....	3.0817 pounds.
Do.....	Turkey.....	2.85418 pounds.
Do.....	Hungary and Wallachia.....	2.5 pints.
Pic.....	Egypt.....	21¼ inches.
Picul.....	Borneo and Celebes.....	135.64 pounds.
Do.....	China, Japan, and Sumatra.....	133½ pounds.
Do.....	Java.....	135.1 pounds.
Do.....	Philippine Islands (hemp).....	139.45 pounds.
Do.....	Philippine Islands (sugar).....	140 pounds.
Pie.....	Argentine Republic.....	0.9478 foot.
Do.....	Castilian.....	0.91407 foot.
Pik.....	Turkey.....	27.9 inches.
Pood.....	Russia.....	36.112 pounds.
Pund (pound).....	Denmark and Sweden.....	1.102 pounds.
Quarter.....	Great Britain.....	8.252 bushels.
Do.....	London (coal).....	36 bushels.
Quintal.....	Argentine Republic.....	101.42 pounds.
Do.....	Brazil.....	130.06 pounds.
Do.....	Castile, Chile, Mexico, and Peru.....	101.61 pounds.
Do.....	Greece.....	123.2 pounds.
Do.....	Newfoundland (fish).....	112 pounds.
Do.....	Paraguay.....	100 pounds.
Do.....	Syria.....	125 pounds.
Do.....	Metric .....	220.46 pounds.
Rottle.....	Palestine.....	6 pounds.
Do.....	Syria.....	5¾ pounds.
Sagen.....	Russia.....	7 feet.
Salm.....	Malta.....	490 pounds.
Se.....	Japan.....	3.6 feet.
Seer.....	India.....	1 pound 13 ounces.
Shaku.....	Japan.....	10 inches.
Sho.....	do.....	1.6 quarts.
Standard (St. Petersburg).....	Lumber measure.....	165 cubic feet.
Stone.....	British.....	14 pounds.
Suerte.....	Uruguay.....	2,700 cuadras ( <i>see</i> cua- dra).
Tael.....	Cochin China.....	590.75 grains (troy).
Tan.....	Japan.....	0.25 acre.
To.....	do.....	2 pecks.
Ton.....	Space measure.....	40 cubic feet.
Tonde (cereals).....	Denmark.....	3.94783 bushels.
Tondeland.....	do.....	1.36 acres.
Tsubo.....	Japan.....	6 feet square.
Tsun.....	China.....	1.41 inches.
Tunna.....	Sweden.....	4.5 bushels.
Tunnland.....	do.....	1.22 acres.
Vara.....	Argentine Republic.....	34.1208 inches.
Do.....	Castile.....	0.914117 yard.
Do.....	Central America.....	38.874 inches.

*Foreign weights and measures, with American equivalents—Continued.*

Denominations.	Where used.	American equivalent.
Vara.....	Chile and Peru.....	33.367 inches.
Do.....	Cuba.....	33.384 inches.
Do.....	Curaçao.....	33.375 inches.
Do.....	Mexico.....	33 inches.
Do.....	Paraguay.....	34 inches.
Do.....	Venezuela.....	33.384 inches.
Vedro.....	Russia.....	2.707 gallons.
Verges.....	Isle of Jersey.....	71.1 square rods.
Vers.....	Russia.....	0.663 mile.
Vloeka.....	Russian Poland.....	41.98 acres.

## METRIC WEIGHTS AND MEASURES.

*Metric weights.*

Milligram ( $\frac{1}{1000}$  gram) equals 0.0154 grain.

Centigram ( $\frac{1}{100}$  gram) equals 0.1543 grain.

Decigram ( $\frac{1}{10}$  gram) equals 1.5432 grains.

Gram equals 15.432 grains.

Decagram (10 grams) equals 0.3527 ounce.

Hectogram (100 grams) equals 3.5274 ounces.

Kilogram (1,000 grams) equals 2.2046 pounds.

Myriagram (10,000 grams) equals 22.046 pounds.

Quintal (100,000 grams) equals 220.46 pounds.

Millier or tonnea—ton (1,000,000 grams) equals 2,204.6 pounds.

*Metric dry measure.*

Millimeter ( $\frac{1}{1000}$  liter) equals 0.061 cubic inch.

Centiliter ( $\frac{1}{100}$  liter) equals 0.6102 cubic inch.

Deciliter ( $\frac{1}{10}$  liter) equals 6.1022 cubic inches.

Liter equals 0.908 quart.

Decaliter (10 liters) equals 9.08 quarts.

Hectoliter (100 liters) equals 2.838 bushels.

Kiloliter (1,000 liters) equals 1.308 cubic yards.

*Metric liquid measure.*

Millimeter ( $\frac{1}{1000}$  liter) equals 0.27 fluid ounce.

Centiliter ( $\frac{1}{100}$  liter) equals 0.338 fluid ounce.

Deciliter ( $\frac{1}{10}$  liter) equals 0.845 gill.

Liter equals 1.0567 quarts.

Decaliter (10 liters) equals 2.6417 gallons.

Hectoliter (100 liters) equals 26.417 gallons.

Kiloliter (100 liters) equals 264.17 gallons.

*Metric measures of length.*

Millimeter ( $\frac{1}{1000}$  meter) equals 0.0394 inch.

Centimeter ( $\frac{1}{100}$  meter) equals 0.3937 inch.

Decimeter ( $\frac{1}{10}$  meter) equals 3.937 inches.

Meter equals 39.37 inches.

Decameter (10 meters) equals 393.7 inches.

Hectometer (100 meters) equals 328 feet 1 inch.

Kilometer (1,000 meters) equals 0.62137 mile (3,280 feet 10 inches).

Myriameter (10,000 meters) equals 6.2137 miles.

*Metric surface measures.*

Centare (1 square meter) equals 1,550 square inches.

Are (100 square meters) equals 119.6 square yards.

Hectare (10,000 square meters) equals 2.471 acres.

# CONSULAR REPORTS.

COMMERCE, MANUFACTURES, ETC.

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No. 173.

## SEWERAGE IN FOREIGN CITIES.

At the request of the Sanitary Board of Savannah, Ga., the Department, on July 18, 1894, sent the following circular instruction to the consular officers in the principal cities of Europe :

The subject of sewerage is one which is receiving special attention in our larger cities, and any information showing the advances which have been made in the leading cities of Europe would be of great value. The subject has recently been urged upon the Department, with reference to the adoption of an improved system in the city of Savannah, Ga.

I have, therefore, to request that, as soon as practicable, you will report to the Department upon the general subject of sewerage in your city; the special character of the sewerage system in operation; whether it is new or old; and the difficulties, if any, that have been overcome in the construction of such system; also, whether any change in the system is contemplated, and, if so, what?

The following list of interrogatories covers the special points upon which information is desired for the city of Savannah, and which may be useful to other cities :

(1) What is the character of the sewerage system in use, and when was it put into operation? In other words, state whether it is merely the ordinary system of sewers flushed with water or some improved system. If the latter, state the principle on which it works, the name of the inventor, and any details likely to be of interest. If there are separate systems for storm water and house drainage, describe both.

(2) What was the total cost of constructing the sewerage? Give also the cost of machinery in use, annual cost of operating the system, the length of main sewers, and material of which built.

(3) What is the number of houses drained and the method of drainage?

(4) What is the number of laborers employed in the sewerage department, and what are the wages paid them?

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(5) How is the sewage disposed of? Is the solid matter separated from the fluid, and, if so, how? What is the cost of disposing of the sewage, and the revenue, if any, derived from its utilization? Detailed information on these points would be especially valuable.

(6) What deodorizers are used, and what process of deodorizing is employed?

(7) What percentage of decrease in the death rate followed the adoption of the existing system?

In short, all information that you may be able to procure as to the sewerage system in your city, its workings, etc., and whether, in efficiency of mechanism, economy, and hygienic effects, it meets the public requirements.

The replies to this circular will be published in the CONSULAR REPORTS.

Replies to the foregoing circular have been received from the consular officers in the following cities, and are published herewith: Amsterdam, Berlin, Bordeaux, Bradford, Bremen, Brussels, Cardiff, Constantinople, Copenhagen, Dublin, Edinburgh and Leith, Florence, Frankfort, Glasgow, Hamburg, Havre, Leeds, Liverpool, Lyons, Manchester, Marseilles, Munich, Rome, St. Petersburg, Stettin, Stockholm, Trieste, and Vienna.

No replies have been received from the consular officers in the following cities: Antwerp, Athens, Barcelona, Birmingham, Christiania, Lisbon, London, Madrid, Milan, Naples, Paris, and Rotterdam.

#### MAPS, DIAGRAMS, AND ILLUSTRATIONS.

The following maps, diagrams, plans, etc., were transmitted with the several reports on sewerage, and are filed in the Bureau of Statistics:

*Amsterdam.*—Sewerage map, prepared and furnished by the board of public works of Amsterdam.

*Brussels.*—Types of sewers, old and new; house and garden basins and siphons; vaulting of the River Senne, with main sewers joined thereto; isolated sewers; main sewer over the Senne; passage of main sewer under the Senne; passage of main sewer under the Maelbeek, with viaduct; passage of sewer under Canal Charleroi; sluice truck for flushing and cleaning sewers; passage of the Holbeck under main sewer.

*Dublin.*—Chart of Dublin Bay, showing plans of proposed new sewerage system.

*Frankfort.*—Chart of the city, showing sewerage system; chart showing deaths from typhoid fever, with percentage of houses joined to sewers and water supply, for a series of years.

*Glasgow.*—Sewage disposal works, pamphlet by Mr. Alsing, designer of the work.

*Hamburg.*—Chart of Hamburg, showing sewerage system; sizes and forms of sewers.

*Lyons.*—Profiles and types of sewers.

*Manchester.*—Patent sludge presses, or filter presses for sewage sludge.

*Marseilles.*—Plan of proposed sewerage system.

*Munich.*—Map of the city, showing the sewerage system.

*Rangoon.*—Plan of the city, showing sewerage and compressed air mains, ejector stations, air-compressing stations, etc.

## INTRODUCTORY REPORT.\*

There is no branch of public health so complex, so incalculably difficult to grapple with, as the proper drainage and sewerage of large cities; yet it must be remembered that unless this be efficiently done an ultimate limit is set by man himself to communities, if not to nations.

The soil of many of our cities, saturated with the putrifying contents of cesspools and leaking sewers, emits at certain seasons the poisonous emanations which generate typhoid fever, yellow fever, diphtheria, dysentery, and cholera, while the waters of our principal rivers are too often converted into open sewers teeming with pestilential exhalations. The government of every state, whose duty it should be to superintend and watch over the health of the community at large, would do wisely to lay down and carry out an efficient, complete, and common-sense plan of drainage and sewerage for every town and city of the commonwealth.

Were the fearful consequences which result from the reprehensible practice of converting our rivers into open sewers properly understood and properly estimated by the public, no expenditure of time or money would be deemed too great to put an end to a system so disgusting and so destructive to the health and lives of the community at large; but more especially of those whose avocations necessitate their daily and hourly exposure to the evil. Unless this suicidal practice is abated, by penal enactment, our cities will ultimately become the hotbeds of pestilence and plagues, such as prevailed in the middle ages.

Favorable as the site of ancient Rome, extending over her seven hills, might at first appear for habitation and defense, it may be safely said that we should never have heard of the eternal city, never would she have become mistress of the world if her rulers and people had not early felt the importance of sanitary measures, and carried them out with a persistence and an ability which should serve as models for all succeeding ages. With not only an intention to meet existing wants, but with apparently a prescience of the future greatness and dominion of Rome, the work of drainage and sewerage was begun by her monarchs, and continued during the Republic, on a scale of such magnitude, and in a manner so enduring as to be unequalled by any subsequent labor of the same kind in other countries. The "Cloaca Maxima" and its affluxes, or branch sewers, rival the largest of the pyramids in solidity and amount of material, and exceed them all in unquestionable utility. Earthquakes, the pressure of buildings, the neglect of two thousand years have not moved a stone out of its place; and for thousands of years to come these vaults will stand uninjured as to this day. The lesson of the

\*In transmitting this report to the Department, Consul Chancellor says: "There being no system of sewerage in Havre, and being familiar with the details of the subject, I have deemed it not amiss to treat it in a general way."

drainage and sewerage of Rome is a fruitful one, and ought never to be lost sight of in the founding and laying out of new towns. In many of these, a proper system of drainage and sewerage is an afterthought, and hence when executed, it is at an immense cost, and often after much sickness, suffering, and mortality among the first inhabitants.

The sewage of large towns and cities consists of the excretal discharges of the inhabitants and of many lower animals; of the foul and contaminated waters of the households, stables, manufactories, and other establishments, and of refuse matters, in a state of decomposition, from markets, slaughter-houses, and other places. The combined quantity of these matters has been estimated at about 7 cubic feet (50 gallons) per diem for each individual, which, for a city with a population of 100,000, rises to the daily average of 5,000,000 gallons, and annually to the astounding quantity of 1,825,000,000 gallons.

To dwell upon the necessity of the immediate and continuous removal of this immense mass of poisonous matter, far away from the precincts of human habitations, or to discuss the disastrous results which must almost necessarily follow their retention in populous communities, would seem superfluous, and yet we find intelligent citizens and legislators, almost everywhere, doubting, hesitating, and procrastinating.

#### SEWAGE DISPOSAL IN HAVRE.

This fatal procrastination is seen and felt not only in American cities, but in many of the European cities, notably in the picturesque old Norman city of Havre, which has practically no system of sewerage, its sanitation, like its architecture, being still mediæval.

The curse of this city is its polluted subsoil, damp foundations, sodden and tainted basement walls, and sewage-laden atmosphere—the result of defective drainage and sewerage. Many of the streets are unpaved—simply macadamized—which renders surface and underground drainage, if not impracticable, extremely imperfect. The soil in the low-lying sections of the city is always saturated with water, charged with pathogenic matter, and the foundation walls of the houses are in direct contact with the soil. Added to this most unsanitary condition of the dwellings, the atmosphere is poisoned by exhalations from cesspools and privies located either within the area of the building or in the courtyard. Rain and household water runs along the street gutters and empties into the harbor. At times, under the pressure of an epidemic, the music of the gutter rill is increased by a system of flushing, which serves to carry an increased quantity of decomposed organic matter and street filth into the docks or harbor; but even this system of transferring filth from one locality to another within the limits of the city is practiced only during the existence of epidemics.

The method of getting rid of excretal matters is the most primitive and dangerous imaginable. It consists in placing small movable receptacles beneath the privy seat into which the excreta fall. When full, these recep-

tacles are removed and carted off in large vans to be emptied and cleaned, being replaced meanwhile by fresh tubs or pails. These vans, laden with the contents of many privies, traverse the most populous streets during business hours, filling the air with noisome and unhealthy emanations.

To say nothing of the unsightliness of the vans, when moving in procession, they not infrequently stop directly in front of the open doors or windows of dwellings as long as it may suit the pleasure or convenience of the drivers, who seem quite unconscious of the nuisance they are creating. Under such a sanitary régime, no surprise need be felt that Havre, with all its natural advantages of location and climate, was scourged by cholera in 1892; by an unusual prevalence of diarrheal and dysenteric diseases during the summer of 1893; by an epidemic of smallpox in the spring of 1894; and now (August, 1894), by a serious epidemic of typhoid fever. In England, practical sanitation has reduced the annual rate of mortality more than one-half, and in the metropolis to less than 17 per 1,000 inhabitants, while in Havre, notwithstanding its admirable situation and unsurpassed climate, the rate of mortality is more than double that of London. For every breach in the simple laws of health, humanity must pay its debt, whether in Europe or America.

#### THE SEWERAGE OF PARIS.

The vast dimensions of some of the Paris sewers do not prevent their being denounced on all sides as unsuited for the work to be performed; the fall is insufficient, the water supply inadequate, and the solid deposits are so great that an army of 1,000 men is employed to keep them from becoming obstructed by pushing along the solid matters. It has been found that, unless this course is pursued, the heavier sewage matters will remain several weeks in these underground passages before they reach the outlet, fermenting and evolving gases of the most dangerous character, which accumulate and are liable to be pressed back into dwellings by every downpour of rain, or "flushing," which sends an unusual quantity of water through the sewers, thereby raising the normal level of the sewage flow and lessening the area occupied by the gases.

The city of Paris has more than 800 miles of subterranean pipes, of which about 500 miles are sewer pipes. The largest of these sewers were constructed at a cost of from \$60 to \$70 per running meter (39.37 inches); the medium size, from \$40 to \$50 per meter, while the smallest cost from \$15 to \$20 per meter. The daily attention to these sewers, with 1,000 *égouttiers*, or sewer cleaners, 20 boats, and 50 wagons, cost annually about \$800,000, while the entire maintenance of the system and the cleaning of the public ways figure in the annual appropriation at nearly \$5,000,000. In addition to existing sewers, Paris is said to be on the point of undertaking a colossal sewerage scheme, the cost of which is to exceed 100,000,000 francs (\$19,300,000), which will provide for the treatment of a large proportion of the sewage by irrigation at St. Germain.

## SEWERAGE OF OTHER FRENCH CITIES.

Of course, other cities of France are not able to sustain expenditures proportionate to those of Paris, and, consequently, they are deficient or absolutely wanting in any system of sewerage approved by science. *Marseilles*, with a population of over 350,000, had no sewers forty years ago. The storm and household waters ran along the streets and discharged into the old harbor; but quite recently, under the pressure of epidemics, canals have been projected to convey the sewage waters some distance from the city; *Bordeaux* (population 225,000), has not more than 30 or 40 miles of sewers in a length of 140 miles of streets; *Toulon* (population 70,000), like *Havre* (population 120,000), has scarcely a vestige of sewers. Warned by the disastrous results of recent epidemics of cholera, there now seems to be a disposition among the people of these cities, as well as those of *Brest*, *Lorient*, *Nice*, and other French towns, to seek the best means of making a recurrence of such disasters impossible, and to this end there is a consensus of opinion in favor of building an approved system of sewers in each of the respective cities.

## SEWERAGE AND THE DEATH RATE.

Sir Douglas Galton, the distinguished English engineer and sanitarian, in an address before the Sanitary Institute of Great Britain, said:

It may be accepted as certain that in every case where the sewerage of towns has been devised on sound principles, and where the works have been carried on under intelligent supervision, a largely reduced death rate has invariably followed.

The following examples showing the deaths from typhoid fever per 100,000, strikingly illustrate the improvement to health following the introduction of an efficient system of drainage and sewerage in certain German and English towns:

*Munich*.—From 1854 to 1859, when there was absolutely no regulation for keeping the soil clean, 24.2; from 1860 to 1865, when reforms were begun by cementing the sides and bottoms of the porous cesspits, 16.8; from 1866 to 1873, when there was partial sewerage, 13.3; from 1876 to 1880, when the sewerage was complete, 8.7.

*Frankfort*.—From 1854 to 1859, when there was no sewerage, 87; from 1875 to 1887, when sewerage was complete, 24.

*Dantzic*.—From 1865 to 1875, when there was no sewerage and no proper water supply, 108; from 1871 to 1875, after the introduction of water, 90; from 1876 to 1880, after the introduction of sewers, 18.

*Hamburg*.—From 1838 to 1844, before the commencement of the construction of any sewerage works, 48.5; from 1871 to 1880, after the completion of the sewerage works, 13.3.

Dr. Buchanan, medical officer of the privy council of England, in his ninth report, has shown the marked improvement to health which followed the introduction of drainage, sewerage, and water supplies in twenty-five cities and towns, with an aggregate population of 593,736. The average of

the death rates per 10,000 for the different places decreased as follows: Mortality from all causes, from 247.55 to 219.87; typhoid fever, from 13.34 to 7.8; diarrhea, from 8.45 to 7.66; pulmonary consumption, from 34.44 to 27.3. Children under one year old, from 55.66 to 50.

On the other hand, it has been clearly demonstrated that improperly constructed sewers have increased the death rate by exposing people to the direct effect of deleterious gases. Altogether however, it would appear, from the above figures, that the purifying of the air of towns by the rapid abstraction of refuse matters is no less important, from a sanitary standpoint, than providing an abundant supply of pure water.

#### DRAINAGE AND SEWERAGE.

The terms "drainage" and "sewerage" are distinct subjects, though, unfortunately, they have come to be used as if they were the same. At one time, it was not so. Town "drainage," when first introduced, was intended, as it was practically carried out, only as a means of carrying off from the neighborhood of houses the refuse waters of domestic operations and for the removal of rain or service water, and the refuse of manufactories. So completely distinct from the sewers were drains considered, that in most places, entrance into the drains from the water-closet or cesspools was prohibited under a positive penalty. The result was that, as the water-closets became more and more used, and the supply of water in towns was gradually and greatly increased, the cesspool system became a greater difficulty than ever, and the evils—in the form of still more completely saturated soils, polluted wells and foundations, and cellars flooded with stagnant and offensive fluids—became at last so notorious that a new system became imperative, and in place of connections between the water-closets and the storm-water drains being rendered a matter of impossibility or difficulty, the connection was, in some instances, made imperative. The drains were no longer looked upon as simply a means for conveying the slop water of houses and the surface water of the streets, but were made to convey not only these, but also the excremental matters from houses. Formerly, the so-called drains were permeable, not only admitting water from the surrounding soil to enter them, but they acted in the converse way, allowing their contents to pass from their interior and permeate the surrounding soil. All this has been changed. From permeable conduits they have been made impermeable, or water-tight, so far as practicable, in order to retain in their interior the matters which they convey, and to prevent, as far as possible, such matters passing out to pollute the soil.

It will thus be seen that the two systems of old-town drains and new-town sewers are specially distinct. In many towns, even in parts of London and Paris, the old drains still remain, being made to serve the purpose of excretal sewers, for which they are quite unfitted, giving rise to evils of a character perhaps less obvious and open to inspection, but not less dangerous, than those arising from the old cesspool system. These drains, or so-

called sewers, are but elongated cesspools, and creating, as they must create, a vast amount of foul air in the aggregate, they are certain to act in a way even more dangerous than the old cesspools, for these, being outside the house, any foul exhalations arising from them have the chance of being wafted from the neighborhood of the house by favorable winds, whereas sewers are directly connected with the interior of dwellings by the soil pipe, so that the foul gases from them are delivered where they are most dangerous, and must necessarily pass through the house before they escape to the external atmosphere, if they escape at all.

In view of all these facts, it is necessary that a well defined distinction should be made between sewerage and drainage pipes, and that the former should be so devised as to carry off excremental matters and household wastes before fermentative putrefaction takes place, and at the same time, carry off all gases as they are formed, so that such gases be not allowed to accumulate in the sewers until they become dangerous. Any system that will not accomplish this object is, in a sanitary point of view, absolutely defective.

#### UTILIZATION OF SEWAGE.

Every living being [says Liebig] produces in its offal the manurial ingredients, both quantitative and qualitative, required for producing the means of sustaining life. It is the law of the circuit of atoms, each playing a part in a long-stretched series of acts of nature, serving consecutively various purposes, and beginning the series anew each time the circuit is completed. Thus, the dung of cattle contains all fertilizing properties needed for growing their food, whilst that of carnivorous animals supplies the manure for producing the food of the creatures on which they prey; and so it is with every living being, including man.

Hence it is that the nitrogen, phosphoric acid, potash, and other organic and inorganic matters contained in the excretal sewage of cities will suffice for producing food for the people it is derived from.

The following analysis, furnished by the late Durand-Claye, after ten years of careful investigation, gives the average composition of sewage water per cubic meter (1 meter=39.37 inches), taken from the outfall sewers of Paris:

Description.	Quantity.	Description.	Quantity.
	<i>Grams.</i>		<i>Grams.</i>
Nitrogen.....	45	Soda.....	85
Phosphoric acid.....	19	Magnesia.....	22
Potash.....	37	Organic matters.....	678
Lime.....	401	Mineral matters.....	893

From the foregoing, it is quite evident that the sewage of towns, even when largely diluted with water, is a fertilizer of some value, and the point to be settled is whether it can be conveyed to the land at a cost which will render it permanently valuable to the farmer. If the system of tubular house drains leading to sewers, and these again to streams or rivers, is to be carried out, then it is clear that on the one hand we commit a great waste, in an agricultural point of view, by throwing needlessly away that which, beyond

all doubt, contains a comparatively large quantity of fertilizing materials, useful for certain crops; and, on the other hand, we commit a great wrong, in a social and sanitary point of view, by polluting our streams and rivers, poisoning the very sources from which we obtain the water useful for household purposes, or making our rivers huge open cesspools, flowing past or through our towns, and sending forth from day to day the seeds of death and disease.

Victor Hugo, who enriched literature with so many great works, uttered a timely and eloquent truism, applicable not only to Paris, but to the civilized world, when, in *Les Misérables*, he said:

Science, after groping for a long time, knows now that the most fertilizing and effective of manures is human manure. The Chinese knew this before we did; not a Chinese peasant who goes to the city but brings at either end of his bamboo a bucket full of what we call filth. Thanks to the human manure, the soil in China is still as youthful as in the days of Abraham, and Chinese wheat yields 120 fold the sowing. There is no guano comparable in fertilizing properties to the sewage matters of a city. To employ the town in manuring the plain would be certain success, for if gold be dross, on the other hand, our dross is gold. \* \* \* We send, at great expense, fleets of ships to collect at the southern pole guano of petrels and penguins, and cast into the sea the incalculable element of wealth which we have at our door. All the human and animal manure which the world loses, if returned to the land, instead of being thrown into the sea, would suffice to nourish the world.

#### GENERAL PRINCIPLES.

In sewerage, controversy has frequently been found to be excited upon those very details of the art which appear to be most simple and the most readily deducible from observation, while the proper ground for discussion, in which it is really urgently needed, in order to determine general principles and mark out leading rules, has been left nearly or quite unoccupied. Thus the form, size, and thickness of sewers have received the most elaborate investigation, and provoked an expression of the most widely different opinions, while the great question of the most healthful and economical disposal of the refuse of towns has apparently remained unsought and unasked. Mr. Drysdale says:

Misled by an instinctive adoption of obsolete plans, we have been content to build sewers, patch upon patch—add length to length of sluggish sewer or practical cesspool, without any principle of arrangement according to which the entire system should be laid out, in order, it may be, to maintain ancient outfalls.

The practical question is, how is the sewage of our towns to be treated, as treated it must be, if the health of the inhabitants is to be considered? The methods of treatment are disposal, other than those involved in the system of *tout à l'égout* (sending everything into the sewer) if this, indeed, may be considered a system at all, and using the sewage in its normal condition and full quantity for the irrigation of land, are pretty numerous and of great diversity of detail, as regards their *modus operandi*; but numerous as they are, they all come under one of the following classes:

(1) Keeping the rain or storm water in drains distinct from those conveying the sewage proper; the rain water to be passed to river or stream.



(2) Dealing with the excreta and household waste in a special way, altogether separate and distinct from the street drains or storm water sewers.

(3) Precipitation or filtration, by which the solid organic and putrescible portions of the sewage are deposited in a solid form, which can be used as an ordinary manure, passing the liquid portion in a condition more or less clear and free from putrescible matter into waterways, or upon the land.

(4) The pneumatic or aspirating process, by which the excremental matters and household wastes are forced or drawn through air-tight pipes as soon as they are formed, by pneumatic suction or pressure, thereby preserving them in a concentrated condition and in a more highly valuable form as a fertilizer after precipitation, or for irrigation purposes.

#### MODERN SEWERAGE SYSTEMS.

(1) *The combined or water-carriage system.*—This system exists in nearly all English towns of any size ; also in Paris, Brussels, Berlin, Frankfort, Hamburg, and a few other continental cities. It consists in treating all sewage, rain water, subsoil water, household and manufacturing wastes alike, by conducting them off in one and the same conduit, a large volume of flushing water serving as a means of conveyance and to prevent sliming of the inner surface of the sewer walls, so fruitful of the production of poisonous gases and pathogenic germs. This, in a word, is the *tout à l'égout* system, which has been hotly assailed by many distinguished engineers and sanitarians both in Europe and America, on the ground that every addition of the moving or flowing force of the sewage matter, obtained by increasing the quantity of water, must of necessity decrease the value of the sewage as a fertilizer, and in a like ratio, increase the difficulties of its final disposal. From a sanitary standpoint, Dr. Van Ovenbeck de Meijer, professor of hygiene in the University of Utrecht, Holland, thus pointedly says :

I can not conceive how sanitarians venture to say that in sewers running only one-half full, containing fecal matter, and connected with atmospheric air, there is not a good condition for the growth of germs of disease, or how engineers can overlook the fact that the "water carriage" system leaves entirely unsolved the important question: What to do with the sewage without involving danger to health? Every main sewer not completely and constantly filled is dangerous to health, and all sewage containing fecal matter is a danger to health willfully created. Fecal matter should never be mixed with other wastes in the center of population.

As a health measure, the combined, or English system, is now almost universally condemned as absolutely and irreconcilably in conflict with the requirements of modern civilization and the teachings of sanitary science. In London, where the system exists in its greatest perfection, it has been found to foul both air and water to such an extent that some supplementary arrangement is deemed necessary, and propositions to this end are now being discussed. In Paris, where the system prevails to a great extent, typhoid fever has become endemic, killing from 1,000 to 3,000 persons annually ; and the epidemic prevalence of cholera at Hamburg in 1892 would seem to

indicate a widespread aerial poisoning, in addition to the polluted water supply.

The weight of testimony against the water-carriage system, or the *tout à l'égout*, and in favor of a separate canalization for excretal and household sewage is so overwhelming that nothing could be more conclusive as to the evils of the one and the value of the other.

(2) *Pneumatic systems*.—The problem of rendering cities healthful by the rapid removal of excremental matters and household wastes, is, in a measure, solved when we can get rid of such matters without any possible connection between them and the surrounding air and soil. The advantages of such a system may be briefly stated as follows:

(a) It prevents the emanations which a protracted stagnation of excremental matters will give rise to, when the dejections are deposited in cess-pools or are allowed to decompose in large water-carriage sewers.

(b) It prevents the introduction of dangerous matters into sources of drinking water and into the surrounding earth, and thereby greatly lessens the danger of epidemic diseases being transmitted through infectious germs contained in fecal matter.

(c) It secures the rapid removal of all excretal and household sewage in a manner to satisfy the requirements of health and economy, and in a condition to render its subsequent utilization as a manure not only possible, but easy of accomplishment.

Several pneumatic systems of sewage have been experimentally applied, each in harmony with suggestions made by M. Belgrand, inspector-general des Ponts et Chaussées, and Baron Haussman, prefect of the Seine, as far back as 1861. Both of these distinguished engineers recommended that the excretal sewage of Paris should be conveyed from the houses by a network of metallic pipes leading into special air-tight tubes which would convey the matter rapidly to a point outside the city, where it could be treated or disposed of for agricultural purposes.

The application of a pneumatic system for the discharge of sewage matters was proposed at Paris in 1862 by Aristide Dumont, but it did not succeed. The idea was reproduced in 1872 by Capt. Charles T. Liernur, a Dutch-American engineer, who suggested another method of discharging excretal sewage by aspiration. This method, known as the Liernur system, was introduced in parts of Amsterdam, Leyden, Dordrecht, and, to a limited extent, at Prague and Hanau, but the system has not been further developed, owing, no doubt, to its excessive expense, and its limited application to the purposes in view. Finally, in 1878, a French engineer, M. Berlier, in charge of the sewage works at Lyons, substituted for movable vessels a subterranean iron conduit, through which the excretal sewage, from a certain point on the quays, could be drawn by aspiration to the works, a distance of 3 kilometers (about 2 miles). This plan, however, does not seem to have been extended in Lyons. In August, 1881, the municipal council of Paris authorized the installation of the system in two districts of the city.

After ten years of trial it has not been extended, nor has it been introduced in any other city, for the obvious reason that, like the Liernur system, it is not designed to deal with more than one per cent of the sewage, viz, the excretal sewage. What is needed is a pneumatic system that will deal with the whole of the soiled waters from the house, leaving only the surface or storm water to be conveyed off through an independent channel.

(3) *The Shone hydro-pneumatic system.*—Perhaps the nearest approach to a system of sewerage which fulfills all the essential conditions for the removal of household sewage, required by a due regard of the laws of sanitation, is a combination of the water-carriage and pneumatic principles, introduced to the public by Mr. Isaac Shone, an English engineer, in 1872. It may be briefly described as a system of distributing stations for the lifting of sewage, worked from one central station by means of compressed air, whereby the whole of the drainage area is divided into a number of compact districts, each with its separate outfall, and discharging into one common main leading to the ultimate common outfall.

The system enables town authorities to successfully drain flat, as well as undulating, surfaces, and to lay the gravitating sewers at good self-cleansing gradients, in shallow, and consequently, inexpensive trenches. It also admits of the very smallest sewer pipes which it has been found practically safe to lay down in order to prevent chokage from sewage proper, being used in the lowest as well as the most elevated town areas. Such sewer pipes can be laid, even in the flattest districts, at gradients steep enough to render them self-cleaning, with the minimum of flushing power.

The Shone system has been in successful operation for the past fourteen years at Eastbourne, England, and as the town area has been extended new installations have been put down from time to time, without interfering with the efficiency of the system. It is also in operation in at least fifty other places in England, including Southampton, Warrington, Preston, Hastings, parts of London, and in many towns abroad, including Karachi and Bombay, India, and Kieff, Russia; but probably the best idea of the objects and scope of the system may be conveyed by a brief description of the sewage works which have been carried out upon this plan at Rangoon, Burmah.

Rangoon is situated on the banks of a tidal river some 35 miles from the sea, and is almost a perfect level. The town was built, some years ago, upon land reclaimed from what was nothing but a swamp, wholly covered at spring tides with water, and the subsoil consists of soft river mud. Under such conditions, the construction of the combined or English water-carriage sewers would have been not only impracticable but most unsanitary.

The city of Rangoon covers an area of 13,312 acres (31 square miles), and according to the census of 1891, the population was 180,324, but the population of the area thus far accommodated by the Shone system is about 100,000, occupying about 6,000 houses. It is contemplated to extend the system from time to time as occasion may require and circumstances permit.

The city proper is divided into twenty-two sections or districts, and within each of these districts is placed a Shone hydro-pneumatic ejector station, containing two ejectors, each of 200 gallons capacity. The sewage of each section or district is conducted by 6-inch diameter gravitation sewers, laid at steep inclinations, into the hydro-pneumatic ejectors. The power that expels the sewage out of the ejectors is compressed air, produced at the air-compressing station, which is supplied to each ejector by a small cast-iron pipe. This pipe is connected with an automatic valve, fixed on the top of the ejector. The compressed air is automatically admitted when the ejector is full of sewage, and, pressing on the surface of the sewage, drives the entire contents before it. The mode of distributing the compressed air to the various ejectors is very similar to that adopted in distributing coal gas for lighting purposes.

The outfall of the whole of the sewage is the Rangoon River, and the sewage is discharged at a level of 3 feet below the lowest tide. The cost of the sewage scheme was a little over \$800,000, or about \$8 per head, which compares favorably with the cost per head of sewerage works in towns having the "combined" gravitating system, some of which are as high as \$40 per head of the population.

The annual working expenditure is given in the municipal returns for the years 1892-'93 as follows: Establishment, 14,834 rupees; cost of fuel, 9,500 rupees; total, 24,334 rupees, which, at an exchange of 4 rupees per \$1, is equal to about \$6,000 per annum.

The health officer of Rangoon speaks highly of the system, and the fact that the death rate has been reduced from 53.06 in 1890 to 33.89 in 1892 is a fair indication of the success of the drainage operations.

A pneumatic ejector is placed in a brick chamber, underneath the street, at the junction of four streets, into which the sewage of the adjacent district gravitates by proper sized stoneware sewers, sufficiently well graded to render them permanently self-cleansing. The ejector station is practically the "outfall" of the district with which it is connected, and the district is as effectually separated from the other parts of the town, so far as its sewage is concerned, as if it were delivered to an entirely separate destination. This will prove an important feature in localizing and dealing with the causes of infectious diseases.

Among the advantages of dividing a town into separate sewerage districts, besides those already pointed out, are:

(1) That it enables the sewage to be carried in small pipes of short lengths and with good gradients, thus avoiding those large spaces for the accumulation of sewage gas, which constitute the great evil and danger of the old system.

(2) As the sewers are laid at good gradients, the sewage flows quickly, and, consequently, has no time to decompose before it passes into the ejectors and is delivered thence into the sealed sewage main. Once there, it has no contact with the atmosphere until it reaches the ultimate outfall.

The compressed air for actuating the ejector is produced at some central station, and conveyed in iron pipes laid under the streets to several ejector stations.

#### SEWAGE DISPOSAL.

The chief, if not the only, source of manural value in town sewage is the excreta of the population. All other matter is useless from a money point of view, and is likely to be prejudicial to the land. At all events, the matters, in town sewage other than excretal matters, if not positively injurious to land, are certainly not necessary or desirable. The saline matters of the excreta resemble the saline matters taken from the land by plants, and alone are useful under ordinary circumstances.

*Evaporative methods.*—No process which depends upon the application of artificial heat can meet with any degree of success, (1) on account of the expense it entails, both for fuel and labor, and (2) on account of the offensive odors invariably given off. The removal of the water or sewage by evaporation is infinitely more complex than the simple evaporation of clean water in a boiler, which, under ordinary circumstances, good fuel will evaporate from seven to nine times its own weight. So high an evaporative efficiency is impossible with sludge, and it is more than probable that not more than one-third such effect has ever been attained.

*Chemical precipitation.*—The objection raised to chemical precipitation is that, no matter what special reagent is used, the ultimate difficulty is the same—usually the disposal of the accumulations of sludge, which contains from 90 to 95 per cent of water. In a paper read before the Institute of Civil Engineers, London, Mr. Norman Bazalgette, the author, stated, as an objection to chemical precipitation, that “it is impossible to manipulate the enormous accumulations of sludge necessarily incident to treatment by chemicals;” and, further, that when chemical treatment preceded natural filtration, “the accumulation of sludge is an objection insuperable from the use of chemicals.”

*Land irrigation.*—No one who has studied the subject of sewage disposal can deny that the right way to dispose of town sewage is to apply it to the land. It is only by such application that the pollution of rivers can be avoided; and, when the local circumstances are favorable, this may be done with more or less profit to the town. But to accomplish this successfully the household sewage must be kept entirely separate from surface drainage and rainfall, because in dealing with a less bulky and less diluted material, the process of purification and disposal are rendered much simpler and less costly. For this purpose a separate system of surface drainage must be provided which will carry off the whole of the rainfall, which may be passed into water courses without any special treatment. It would be quite impossible to deal with the whole or any considerable part of the rainfall over a large city by any process of irrigation, for there are times when the enormous quantities of storm water coming down the drains and mixing with the sewage would waterlog any ordinary irrigation area, however perfect the process

might be of dealing with a certain amount of household sewage on a certain area of land.

The drawbacks and difficulties attendant upon any system of irrigation may be said to consist principally in the volume of sewage to be treated. The efficiency and the economy of the process of irrigation are generally in an inverse ratio to the volume of sewage to be treated. There may be little difficulty in dealing with the sewage of a small town, but in dealing with that of large and densely populated cities the circumstances are materially different and the difficulties incalculably greater. In the first place, land can not usually be obtained in the neighborhood of large cities of sufficient extent and quality to absorb the sewage matters when diluted with a large volume of surface and storm water. This may be safely accepted as the rule when we consider that one acre is required in ordinary broad irrigation for every 30 or 40 individuals of the population.

By the more scientific process of "intermittent downward filtration" it is said to be possible to apply sewage diluted with surface water to one acre of land for every 1,000 of population, but it is extremely costly to lay out and prepare the land for such a purpose. Mr. Baldwin Latham, the well-known English engineer, referring to the process of intermittent filtration, says:

I have a case at present in hand at Menton for the Croyden Rural Sanitary Authority, where we apply the sewage of 1,000 people to an acre of land, but that land has cost more than £300 (\$1,500) per acre to prepare it, in addition to the original cost of the land.

Of course, if surface and storm water be excluded, and the household sewage conveyed to the irrigation fields through a separate system of pipes, by aspiration or air pressure, such as has been described in connection with the Shone system, the cost would be lessened in proportion to the decrease in the volume of sewage water to be treated. This plan is rapidly growing in public favor, and will most probably be adopted as the general system for sewage disposal in European cities.

#### GENERAL CONCLUSIONS.

(1) That the proper disposal of sewage involves the beneficial appropriation of refuse matters, so as to make them actually productive, avoiding interference with the domestic uses of inland waters for which they are properly adapted.

(2) That sewage matters should be made available for agricultural purposes, and the results in this respect are limitable only by considerations of expense as weighed against the value of the result.

(3) That there exists between the air of water-carriage sewers and the external atmosphere a constant interchange, and as is the air of the sewer, so will be the air of the street.

(4) That excremental matters and other household sewage ought to be rigidly excluded from all storm-water sewers.

(5) That all unhealthy putrescible matters should be removed at short intervals from centers of population by means of pipes practically air-tight.

(6) That in every respect, the best results in the ultimate disposal of sewage have been obtained by irrigation, when the sewage matter is not diluted by flushing or storm water.

C. W. CHANCELLOR,  
*Consul.*

HAVRE, *August 18, 1894.*

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#### AMSTERDAM.

The city of Amsterdam has no regular sewerage system. Different systems of discharging and collecting sewage are in vogue. In the old part of the city, surrounded by the Singelgracht,\* the sewage in some buildings is deposited in a large cesspool under the cellars. From these cesspools, the superfluous water flows through a sewer from the building to the canal. When the cesspool is filled with solid matter, it is cleaned by municipal laborers at the expense of the house owner. In olden times, this solid sewage was taken from the cesspool at night, placed in large tubs, and deposited in a covered boat on the canal in front of the building. At present, it is forced by hand pumps through a large rubber pipe into hermetically closed tank carts. The process is perfectly odorless. This work is also performed by city laborers at the house owner's expense.

In some buildings, the sewage is flushed by means of the surplus water directly from the house to the canal. In other buildings, in the old part of the city, the excrement is deposited in tightly closed tubs furnished by the city, and removed every night by city laborers. In some places, an ordinary bucket is used for the depositing of excrement; this is emptied every evening into a reservoir cart specially adapted for the purpose. A man with a loud rattle precedes the cart to give notice of its coming. The people thus notified, bring their buckets to the sidewalk, and when emptied rinse them in the canals.

The rain water flows overground directly into the canals. Where this is impossible, it is conveyed underground through small sewers to the canals.

The canals are flushed daily by water let in from the Zuider Zee, which flows with a fall of nearly 20 inches through the city to the North Sea Canal. The flushing of the canals may also be effected in a reverse way, viz, by pumping out the water with a steam engine of 300 horsepower, located on the east side of the city, and letting in the water from the North Sea Canal. The heavy stuff which settles in the canals is removed by dredging.

In the parts of the city outside of the Singelracht, the Liernur system is used for gathering the sewage. This system collects the excrement in a web of closed iron pipes, through which it is forced by atmospheric pressure to a

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\* The Singelgracht was a canal, which completely surrounded the old fortifications.

place outside the city. At this place, the sewage is prepared by machinery for agricultural purposes, without in any way affecting the public health.

This system was first introduced in 1876, and has since been gradually extended. It was invented by the late Capt. Charles F. Liernur, who died at Berlin, February 12, 1893. It is now represented by the two sons of the inventor, Morris Francis and W. Liernur, engineers, at Saint Cloud, 51 rue de la Guette, near Paris, France.

#### COST.

The total cost of constructing this system can not be correctly stated, partly because the building entailed other public works, as the filling of canals, the making of new streets, and, partly because the first construction was experimental, resulting later in a definite construction and machinery. However, by taking as a measure the expenses for the different extensions, the cost can be estimated at about \$4.80 per head, for those whose buildings are connected with this system, the cost of constructing the pumping station with its machinery included. The cost of the station, excluding the price of the ground, was about \$55,000. The cost of erecting the ammoniac factory, with all its machinery, amounted to \$34,000. The yearly expenditures for labor, repairs of pipes, streets, coal, etc., is, for those directly connected with the system (60,996 inhabitants, at 30 cents per head), \$18,298.80; for those using merely the tanks in front of the houses (59,219 inhabitants, at 45 cents per head), \$26,648.55; total, \$44,947.35.

#### LENGTH AND CONSTRUCTION.

The total length of the main sewer is about 12,700 feet. All the sewers are constructed of cast-iron socket pipes of 5, 6, 8, and 12 inches internal diameter. The joints are filled with hemp and lead, like the joints of gas and water pipes. In most places, they are supported by a continuous foundation of piles of 39 feet, driven at a distance apart of about 10 feet and connected by beams of 4 by 8 inches.

#### HOUSE DRAINAGE.

The number of houses connected with the Liernur system is 6,619, of which 3,031 are situated on streets through which the pipes of the system do not pass.

The sewage of these houses is emptied into iron tanks of 75 gallons capacity, in the street before the houses. These tanks are emptied three times a week by portable pumping machines. The excrement, it is claimed here, is carried by its own weight from the privy, situated in the house, through a pipe to the main pipe in the street.

The "fall" or "standpipes" are carried above the roof, and are left open. The object of this is to permit the escape of sewer gas, and to admit air in the district reservoir, when the side conduits and the main pipes are being emptied. The bottoms of the standpipes, as well as every privy, are



provided with an arrangement to keep back any bad smell. The gases from the privy escape through small ventilation pipes leading to the roof.

#### LABOR.

Exclusive of the laborers at the ammoniac factory, 76 men are daily employed on the Liernur system. Their wages amount to \$21,089 per year.

#### DISPOSAL OF SEWAGE.

The sewage matter gathered by the Liernur system at the central pumping station is transferred into sulphuric ammoniac. The heavy stuff is first separated from the liquid by lime and a settling process.

The concession for manufacturing has been granted for a term of ten years to a company. The profits of this company, for the past year, amount to \$12,000. Half of this sum has been refunded to the city.

Deodorizers are not used. The sewage matter is conveyed through closed pipes. During the manufacturing process, which immediately follows, the lime prevents the escape of any bad odor.

#### DEATH RATE.

Previous to the introduction of the system in 1869, the mortality of the city was 25 per 1,000. During the past year, the mortality was 18 per 1,000. This favorable condition can not be entirely attributed to the Liernur system, which is not used in the whole city. Since the inclosing of the Y (harbor) the canals have been regularly refreshed and the methods of city cleaning largely improved.

The central pumping station connects with 32,809 feet of pipes for the transportation of sewage matter, and with two collecting and thirty-six district reservoirs having nearly 85,300 feet of mains.

EDWARD DOWNES,

*Consul.*

AMSTERDAM, *November 20, 1894.*

#### THE LIERNUR SYSTEM DESCRIBED.\*

[Part of translation by Consul Eckstein of an article published in Amsterdam on the city sanitary service.]

The inventor of the system, Captain Liernur, set to work on the idea that the flushing by water, leaving out of account its effects on health, caused a loss of millions and millions to the farmer, and he concluded that compressed air might be employed. This has the advantage of being everywhere present, and it diminishes nothing from the volume or weight of the matter. Let us briefly describe this system, as worked in Amsterdam, with some unimportant alterations: The excreta fall along the privy pan into a funnel, which is so arranged that the matter drops directly into a turned-up  $\varnothing$  bend fastened to a standpipe; in the funnel is a grate to prevent any large solid matter from entering the pipe. This funnel is, moreover, connected by a pipe with the outer air, so that offensive gases are carried off. Near the funnel there is a lid over the  $\varnothing$  bend, which can be screwed off for inspection and the removal of any obstacle in case of stoppage.

\* Reprint from CONSULAR REPORTS No. 113 (February, 1890), p. 320.

The different stories of a house are all connected with the same standpipe, which is extended above the roof level to obtain the necessary air pressure. At the bottom there is again a siphon, to which a distention valve is fixed, to carry off the gases which accumulate in the soil pipe; this valve turns the gases into another pipe, which also extends above the roof. As a rule, this second pipe is coupled on to the first in the attic. The siphon is also furnished with a lid, which can be taken off to remove any obstruction. The standpipe runs out into the middle of the street, where it can empty itself into a small reservoir, which can be shut off by a valve. The object of this is, in case of obstruction in any standpipe, to be able to shut off all the other standpipes and turn the full volume of air on this one, which is alone connected with the vacuum.

From the small reservoir runs a side escape, which empties all the privies at once into the main, this being connected with the street reservoirs by means of turn cocks. Every block of buildings, therefore, must have a side escape into the main.

Several escapes empty themselves into the street reservoir, generally about six or eight, these reservoirs being mostly situate at cross streets. From the pumping station at the Kostverloven Wetering there run two chief mains, the one serving for the pneumatic working and the other for the conveyance of the soil through all the parts of the town where the Liernur system is completed. The street reservoirs are connected by taps with these chief mains.

At the central pumping station a steam air-pumping engine of 60 horsepower exhausts the large reservoir. The chief mains being connected herewith by the opening and shutting of taps, the air volume therein gradually diminishes, and this again reacts on the street reservoirs. Thus, the air is exhausted from reservoir to reservoir. If, now, the tap of the escape pipe from the building to the street reservoir be opened, then the vacuum extends itself once more to the excreta in the *o* bend. From above there is a volume of air pressing downwards, which, in its course, carries everything with it and empties the same into the street reservoir. When this is full, the taps of the chief air main are turned off and the tap of the chief conveyance main opened, which has also been exhausted. Above the reservoir is a valve, and this being opened the outer air presses on the soil and drives it into the chief conveyance main, and as the engine continues to exhaust the air the soil speeds along to the large reservoir at the pumping station. The speed would become something enormous if the mains were quite horizontal; but, as they sometimes rise and fall, this serves to moderate the speed. At the pumping station the soil is received in two lower reservoirs. An arrangement brought into action by the pumping engine alternately opens and shuts the taps, so that automatically, as soon as one reservoir is filled, its taps are closed and the taps of the next one opened for the reception of matter. In the same automatic way, the matter is brought up into the two upper reservoirs, whence it flows off to the different quarters where it is required. The gases which are drawn off from the chief main are burnt in the fires under the boiler.

At the end of 1888 the number of blocks of buildings connected with Liernur's system was 2,847, and these blocks were inhabited by 50,240 persons. The quantity of soil amounted to 44,840,150 liters.\* To the Belt Liernur feces are also brought from the temporary arrangement by boats. This is the so-called tub system with drop pipes. The fixing of the standpipe and the tunnels attached is just the same as in the other system, only the soil in this case runs into small reservoirs capable of containing from 200 to 300 liters, situated in front of the house, whence it is pumped by an air pump into tanks and conveyed by boat to the Belt. Last year 35,121,500 liters were collected in this way. The exchange-tub system is distinguished by its simplicity. It is in working in 334 blocks of buildings, and requires 1,505 sets of tubs, which are daily carried from the houses in well-closed carts and conveyed to the Belt, where, in a special building, they are emptied, cleansed, and disinfected. The average number of tubs exchanged every day is 810, and the quantity of soil collected in this way amounted last year to 1,500,000 liters. The original intention was to turn the matter collected by the Liernur system and the exchange-tub system into "poudrette," and a

\* 1 liter = 2.113 pints.

"triple-effect" was set up for this purpose. To carry out this, however, it is necessary to allow the matter to thicken into a paste, and, as this did not succeed, the plan had to be given up. At present tests are being made to turn the fæces into sulphureted ammoniac, which so far have been very successful. If the Liernur fæces cannot be worked up artificially, they are taken to compost sheds, the reservoir of fæces, or to the boats for conveyance to the country.

Now, what do we find at the central Belt? (1) Liernur fæces collected by the air pumps; (2) Liernur fæces brought in by boat; (3) fæces from the exchange tubs. But this is not all. The cesspool carts which patrol the back quarters of the town, and into which the fæces are poured in a most unsightly manner from all sorts of vessels, brought in 7,277,000 liters in the year 1888. And now comes the residuum of the night work. In 1888, there were emptied 871 privies with the latrine cleansing machine, and in 83 cases it was necessary to carry the soil in buckets by hand, which produced 10,651,000 liters. Such a machine empties a privy without smell: A thick hose is so placed in the cesspool as to have its termination below the matter. This hose is then fastened to an iron cylinder or a large, air-tight barrel capable of containing 1,500 liters. By means of an air pump the cylinder is exhausted and the matter flows pneumatically into the barrel. A gutta-percha ball shuts off the connection as soon as the barrel is full. The gases are drawn off from the pipe and burnt in a fire attached to the pump, so that there is no smell. One night we convinced ourselves of the excellent qualities of this machine, which, being worked by hand, causes no noise. Some means must be found to dispose of this immense mass of fæces, consisting of nearly 100,000,000 liters, or 100,000 cubic meters. As we have said before, part of it is turned into sulphureted ammoniac, and another part is taken off by boats; consequently we need not be concerned on this head.

In the meantime, the dust carts in their daily rounds collect an immense mass of ashes and refuse at every house and in every street. Large quantities of refuse and street sweepings and floating matter from the canals are brought in by boat—in 1888, *inter alia*, 4,535 carriages. The abattoir also sends its offal. All this material is sorted at the Belt, and objects of any value set aside, such as rags, paper, iron, glass, etc., and then the rest is taken to the compost sheds, where it is flooded with the Liernur fæces, and so the compost manure is made.

The street sweepings and floatsam of the canals, which are not used in the compost sheds, after being assorted and dried, are sold in trade and bring a good price. What still remains of the fæces is put into a large brick reservoir 65 meters long by 25 meters broad and 4 meters deep, whence it is sold for the manuring of fields and sandy soil. The market gardeners are the largest buyers, this article being specially useful in the cultivation of cauliflower. In 1888, the total receipts for manures of all kinds was \$55,840.

The premises of the central Belt are entirely surrounded by water, which greatly facilitates the loading and unloading of boats, while the grounds are also rendered easily accessible to the dust carts. A branch line connecting these premises with the Dutch Railroad is still a private wish.

If one pays a visit to the Belt in the morning, one sees a continual streaming in and out of carts and boats, which deposit their various loads here. The quantity of ashes and refuse brought in in 1888 amounted to 25,860 cart loads, 2,813 barrow loads, and 9,470 boat loads, making a total of 117,363 cubic meters.

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#### BERLIN.

Referring to the circular instruction of July 18, 1894, respecting sewerage, I have the honor to state that the whole subject is most fully and scientifically treated in a work entitled "The Canalization and Drainage of Berlin," compiled and edited by Dr. James Hobrecht, and printed by direction of the

Berlin city government. An atlas and fifty-seven plates and tables complete the work which is so thoroughly and wisely arranged that any condensation by me would be unsatisfactory. The condition of the sewage farms is specially treated, and all the information the city of Savannah desires on the sewerage question is to be found in Dr. Hobrecht's work.

A popular article in the *Century Magazine* for July on Berlin drainage and sewerage farms has most probably been noted by the Savannah authorities.

The work referred to above costs \$32.13 (135 marks). The maps and tables make the book expensive.

F. C. ZIMMERMAN,  
*Vice-Consul-General.*

BERLIN, *September 19, 1894.*

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#### BERLIN'S SEWAGE FARMS.

The article referred to by Vice-Consul-General Zimmerman, as having been published in the July (1894) number of the *Century Magazine* is entitled "What German Cities do for Their Citizens," and is to be found on page 380 of that number. The author is Mr. Albert Shaw. With reference to water supply, drainage, and sewage farms, Mr. Shaw says:

The sanitary authorities at Berlin have led the world in recent inquiries into the relation of water supply to public health, and the character of the service rendered by the Berlin waterworks is constantly improving. Science has triumphed notably over natural difficulties, and the municipality will be able, in developing the service, to keep pace with the demand. When the Berlin authorities decided to establish a metropolitan water supply, they also determined upon another and still greater undertaking. They perceived that the modern city requires, as the complement of a good system of pure water distributed through every street and every building, an equally good system of house drainage and of sewage removal and disposition. The modern ideal is a strong, pure volume of water, derived from sure and constant sources that are beyond danger of pollution, forced by ample pressure through a network of mains and pipes penetrating every abode, and then, contaminated by use and saturated with refuse from closets, kitchens, and street drainage, collected again, and carried off in sewage tunnels to some safe destination.

Berlin had drained into the Spree, and had used vaults for solid waste instead of the modern all-receiving sewers. Good drainage was as necessary as good water, and the permanent discharge of unpurified sewage into the Spree was out of the question. Artificial purification and the manufacture of fertilizers from the precipitated solids, would have been possible; but Berlin wisely adopted the better plan of natural purification by the irrigating of land. Immense research was bestowed upon the subject, with the result that the Berlin drainage is the most perfect in the world, and, so far as physical forms and conditions are concerned, is unquestionably that city's most notable achievement in municipal housekeeping. The city was divided into twelve drainage districts, called "radial systems," the divisions being arranged upon topographical considerations. The sewers of each district were to converge at a common center, at which would be located a receiving basin and steam pumping works. A tunnel was to connect each of these district centers with the reservoirs and pumping works of a sewage farm some miles distant.

Excepting for some thinly populated outskirts, all the houses of Berlin are now connected with the new drainage works, which are carrying annually from 60,000,000 to 70,000,000

cubic meters of sewage to be distributed by scientific irrigation over the surface of municipal farms having an aggregate extent of more than 20,000 acres, or upward of 30 square miles. Additional land has been bought from time to time. It is interesting to note that a city, the municipal limits of which include only 25 square miles, should have acquired an outside domain of 30 square miles as a place for the discharge of its liquid waste. The Berlin sewage farms were tracts of rather poor and sandy soil; but land is not very cheap in the vicinity of so great a city, and the purchase money reached about 15,000,000 marks [\$3,570,000]. An additional 15,000,000 marks had been spent prior to 1893 in laying out the farms, trenching and tiling them for irrigation purposes, and equipping them with the necessary buildings and improvements. At that time there had been expended upon the radial system in Berlin and the discharging tunnels about 65,000,000 marks [\$15,470,000], making a total investment of nearly 100,000,000 marks [\$23,800,000]. With the further outlay to be made in completion of the system as a whole, the new Berlin sewage works, including the farms and their improvements, may perhaps be said to constitute a 120,000,000 mark [\$28,560,000] plant.

From an American point of view, it is novel to consider a city's drainage works as a self-sustaining or productive enterprise, like its waterworks and its gas works; but it is in that light that Berlin regards it. Before the new system was introduced the citizens had to pay for the removal of night soil, etc. The city now charges a moderate sewage rate against all property that the system serves. The parts of the farms that have been brought under closest cultivation are already very profitable, although the net income from the entire 30 square miles does not yet pay the full interest on the investment, for purchase and improvement, of 30,000,000 marks [\$7,140,000]. The fertilizing value of the sewage is so great, and the administration of the farms is so superb, that within a very few years the investment will have become enormously productive. On each of the farms are nurseries of young fruit trees, and considerable areas of orchard have already begun to yield some fruitage. Prodigious crops of vegetables are grown, and the yield per acre of cereals and grass is similarly remarkable. Within a reasonable period, the sewage farms will have earned profits enough to pay back all that was invested in them, and, eventually, they will be a source of surplus income that will materially lessen the load of municipal taxation. Meanwhile, from a sanitary point of view, the system is an unqualified success.

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#### BERLIN SEWERAGE IRRIGATION SYSTEM.\*

The westward growth of the city of Berlin, and the consequent construction of new streets in direct connection with Berlin streets, but beyond the city limits and within the municipalities of Charlottenburg and Schöneberg, has been the cause of various complex questions. The drainage of these streets was exceedingly difficult for Charlottenburg and Schöneberg, and, at the same time, Berlin incurred the danger of having the healthful effect of its sewerage system impaired by the drainage of filth into the ship canal. As incorporation of these independent municipalities was impossible, nothing remained but to come to an agreement with them. Accordingly, an agreement was made with Charlottenburg in November, 1885, in regard to that part of its territory extending from the Church of the Twelve Apostles almost to the Zoological Gardens, and another agreement was made with Schöneberg in August, 1886, in regard to its territory between the Botanical Gardens and Motz street. It was, therefore, decided to extend the sewerage system beyond the city limits.

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\* Reprint from CONSULAR REPORTS No. 130 (July, 1891).

At the end of 1888 there were in operation 126,089 meters\* of walled canals, 441,883 meters of earthenware pipes, and 71,343 meters of force pipes. By means of the earthenware pipes and canals (sewers), 18,221 Berlin built lots (including 27 public closets) were drained.

For the consumption of this sewer water from streets and lots, which is sent out of the city from the pumping stations through force pipes, the city has beyond its limits 3,693.09 hectares (1 hectare=2.471 acres) of land suitable for irrigation.

The cost of erecting all these works up to the close of the fiscal year 1888-'89 was 69,261,848.84 marks, which was obtained through loans. Of this sum there were expended—

	Marks.
Canals and earthenware-pipe systems.....	34,746,527.03
Pumping stations (land, buildings, machinery, etc.).....	4,752,360.28
Force-pipe systems.....	9,578,324.69
Suitable farms.....	12,485,240.02
Adapting 3,202.06 hectares to irrigating purposes.....	6,168,129.71
Incomplete adaptations.....	469,270.89
Other expenses on such farms (buildings, machines, roads, regulation of streams, etc.).....	1,061,996.22
Total.....	69,261,848.84

While this project of using the sewer water for agricultural purposes, instead of allowing it to run into the River Spree, has been warmly indorsed by the population of the city, it at first met with some opposition from the State. In 1882, a ministerial commission was appointed to watch the construction and management of the irrigating works of the city of Berlin. Much anxiety was caused in the year 1883 by the report of a State minister to the effect that a further extension of the Berlin sewerage system ought not to be permitted. That the objection has been overcome and the obstacles raised by the country police removed goes to prove that the cleansing of large cities is best effected by this system. The more thought given to this subject the more quickly does the correctness of this conclusion appear.

According to a municipal statute of March 7, 1877, persons whose property borders on new streets are responsible not only for the costs incurred in the purchase of the street surface and in paving, but also for the cost of drainage, and, in justice to inhabitants of thinly populated quarters, a fixed unit of cost had to be adopted for the whole city; the amount thus due for drainage is estimated at 50 marks per meter of street front. In like manner, 50 marks per meter of street front is assessed on those streets of Schöneberg and Charlottenburg to which, as shown above, the sewerage system of Berlin was extended, and, in addition to this amount, an annual tax of 6 marks per meter of street front.

The cost of connecting the following six pieces of property with the municipal sewers was borne by the owners of the same:

(1) The garrison hospital, near Tempelhof.

\* 1 meter=39.37 inches; 1 mark=23.8 cents.

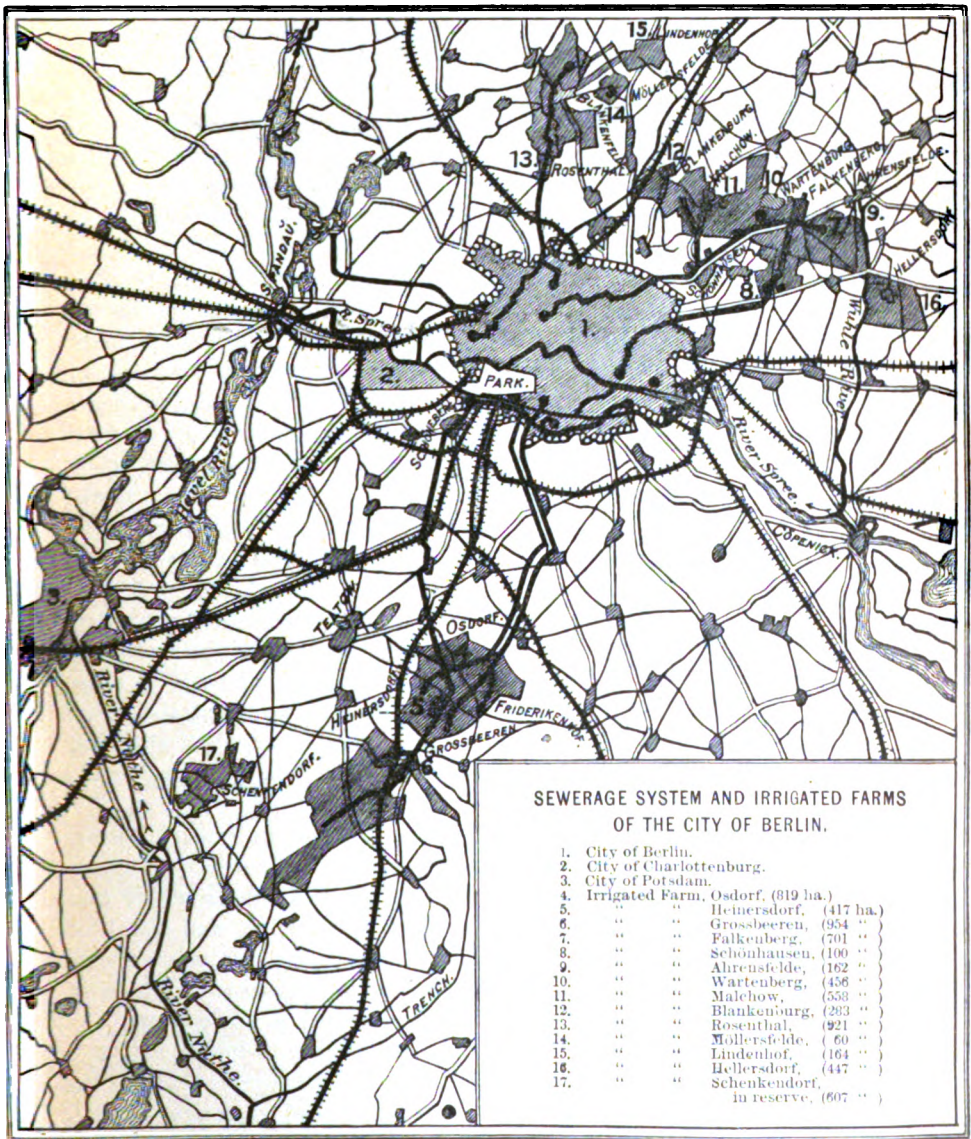
- (2) The train establishment on the Tempelhof road.
- (3) The aniline factory on the Wiesenüfer.
- (4) The technical high school in Charlottenburg.
- (5) The Elizabeth hospital for children on the Hasenhaide.
- (6) The barracks of the first and second battalions of the railway regiment in Schöneberg.

The receipts from these pieces of property in the fiscal year 1888-'89 amounted to 9,087.74 marks; the receipts in the same period from the municipalities of Charlottenburg and Schöneberg were 59,538.92 marks, and the receipts from lots within the Berlin city limits amounted to 1,951,370.51, making a total of 2,019,997.17 marks.

The expenses of the central drainage department and the cost of operating the sewers, pumping stations, etc., amounted to 801,837.16 marks.\* There therefore remained over for payment of interest and amortization of loans incurred for constructing pumping stations, sewers, etc., 1,218,160.01 marks. The loans for these purposes amounted to 49,077,212 marks at the close of the fiscal year 1888-'89.

As the amount requisite for interest and amortization was 2,616,997 marks, there was a deficit for this purpose of 1,398,836.99 marks. Moreover, there were other expenses incurred in the completion of radial systems, as well as in the purchase of farms, the adaptation of the same for irrigation, and the erection thereon of necessary buildings, which were paid from loans. The amount expended for such purposes up to the close of 1888-'89 was 20,184,636.84 marks, which required for interest and amortization 1,068,163 marks per annum. As the net surplus of gain from all the irrigated farms was, in 1888-'89, only 219,756.20 marks, there was here, also, a deficit amounting to 848,406.80 marks. By adding to this the foregoing deficit of 1,398,836.90 marks, the total deficit is shown to have been 2,247,243.79 marks. This, with other small expenses, necessitated a payment from the city treasury of 2,318,552.85 marks. Up to the present the city council has refused to remedy this state of affairs by raising the rate of drainage dues. From 1882-'83 to 1887-'88 this annual deficit increased from 1,223,633 to 2,449,831 marks, but in the year 1888-'89 it decreased about 150,000 marks. This was due to the relatively favorable results on the irrigated farms. The word relatively is used because not one of these farms paid enough to cover the interest on the amount invested in it. This financial loss is, however, borne with resignation, in view of the good effects thus obtained. When, seventeen years ago, the city council decided to adopt this general sewerage system, it stated that it was done "because we are thoroughly convinced that the adoption of this system is the only way to obviate the ever-increasing complaints in regard to the condition of our streets, to stop the poisoning of the ground on which we live, to prevent the defiling of our water courses, and to create in our houses, which shelter nearly a million inhabitants, con-

\* According to the principle, which obtains in all the municipal departments, that each department must pay its own administrative costs, the drainage commission was obliged to pay from its own receipts its personal and office expenses, amounting to 79,320.14 marks.





ditions which will render cleanliness and salubrity possible and be an important forward step for our city."

These results have been obtained, and hence fault is no longer found with the irrigated farms, as they were not established as a financial venture. Moreover, it must be borne in mind that only a part of these farms have been put into working order. If only the older farms be considered—(1) Osdorf, with Heinersdorf and Frederikenhof; (2) Grossbeeren; (3) Falkenberg, with Birkenfeld and Neuahrendsfelde; (4) Malchow, with Blankenburg and Wartenberg—the expended capital (16,021,096.46 marks), it will be seen, requires for interest at  $3\frac{1}{2}$  per cent (leaving out of account amortization, which is not, properly, to be considered among the expenses) 560,738.38 marks. The proceeds from these estates in 1888-'89 were 237,990.70 marks; hence the deficit of interest was 322,747.68 marks. While this result does not look brilliant, as a fact it is much more favorable per head of population than are the results in other cities employing different systems for cleansing their sewer water. In Nos. 16 and 18 of the Sanitary Engineer (newspaper) for the year 1889, Chief Engineer Lüttberge, of Freiburg, in an article entitled "Clarifying Establishments and Irrigated Farms," showed, from official data, that the cost per head of population for purifying such water was, at Frankfort, 1.22 marks; Wiesbaden, 0.68 mark; Essen, 0.56 mark; the irrigated farms of Berlin, 0.48 mark. As a matter of fact, moreover, the cost of purifying water in this way in Berlin in radial systems 1 to 7, with a population of 1,193,207 souls, was, in the fiscal year 1888-'89, only 0.27 mark.

But not only in a financial way is the result favorable to the irrigated farm system. While the value of purely mechanical and technical clarifying establishments constantly decreases from wear and tear, the value of these constantly manured estates continually increases. Furthermore, the water which flows away from the irrigated fields is chemically, physically, and bacteriologically purer than that which flows from artificial purifying establishments into the public water courses.

Before showing the practical results of agriculture on the irrigated farms, it may be well to remark that (1) the estates of Hellesdorf and Schenkendorf are not yet used as irrigated farms; (2) Osdorf with Frederikenhof and Heinersdorf, Falkenberg with Birkenfeld and Arendsfelde, and Malchow with Blankenburg and Wartenberg are each treated as one farm, so that, with Grossbeeren, there were four farms; (3) of the lands adapted to irrigation in the year 1888-'89, 639 hectares and 3 ares were rented to 408 persons.

As of further explanatory interest, there are given with this report (1) a map giving a general idea of the manner in which disposition is made of the sewer waste of Berlin, and (2) a table of agricultural and pecuniary statistics for the fiscal year 1888-'89 for the four irrigated farms referred to.

It will be seen from this table that the greatest net profit was obtained from cattle turnips and horse carrots—respectively, 250 and 200 marks per hectare; that the profits from summer and winter wheat, winter rape, pota-

toes, and cabbages exceeded 100 marks per hectare; and that the profits on all other articles were less than 100 marks per hectare, the cultivation of mustard and hemp being even at a loss.

In closing this report it must be added that in the period under report sewer waste was not only used for watering and manuring the city farms, but was also sold to neighboring farmers, the receipts from this source being 3,697.30 marks.

*Gross and net results of agriculture on the four irrigated estates, Osdorf, Grossbeeren, Falkenberg, and Malchow, in the fiscal year 1888-'89.*

[1 hectare=2.471 acres; 1 mark=23.8 cents; 1 kilogram=2.2046 pounds.]

Name of crop.	Area.	Average crop per hectare.		Average selling price per 100 kilograms.		Gross receipts per hectare.	Net receipts per hectare after deduction of 250 marks for expenses.	
		Grain, etc.	Straw.	Grain, etc.	Straw.		Gain.	Loss.
	<i>Hectares.</i>	<i>Kilos.</i>	<i>Kilos.</i>	<i>Marks</i>	<i>Marks.</i>	<i>Marks.</i>	<i>Marks.</i>	<i>Marks.</i>
Wheat:								
Winter.....	83.81	1,620	3,011	18.16	2.71	375.80	125.80	.....
Summer.....	181.09	1,664	3,312	18.73	3.05	412.68	162.28	.....
Rye:								
Winter.....	397.35	1,694	3,072	15.12	3.04	349.52	99.52	.....
Summer.....	11.42	1,136	2,409	15.00	3.89	264.11	14.11	.....
Barley .....	76.54	1,534	1,783	13.50	2.82	257.37	7.37	.....
Oats .....	380.74	1,614	2,916	13.80	2.90	307.30	57.30	.....
Winter rape.....	23.53	1,657	3,136	21.92	1.00	394.57	144.57	.....
Winter turnips.....	23.36	1,495	2,817	20.99	1.00	341.97	91.97	.....
Summer rape.....	26.5	1,133	2,033	25.67	1.00	311.17	61.17	.....
Mustard .....	2.65	200	1,400	20.00	1.00	54.00	.....	196.00
Hemp:								
Fiber.....	28.63	7,555	.....	3.00	.....	226.65	.....	23.35
Seed.....		600	5,200	10.00	1.00	112.00	.....	138.00
Cattle turnips.....	373.16	30,400	.....	1.65	.....	501.60	251.60	.....
Horse carrots.....	24.22	22,167	.....	2.02	.....	447.77	197.77	.....
Potatoes .....	53.13	11,372	.....	3.38	.....	384.37	134.37	.....
Cabbage .....	44.92	12,263	.....	3.00	.....	367.89	117.89	.....
Grass.....	781.96	59,534	.....	.5335	.....	317.61	67.61	.....

W. H. EDWARDS,  
Consul-General.

BERLIN, May 20, 1891.

#### BORDEAUX.

Although statistics prove Bordeaux, with 240,000 inhabitants, to be one of the healthiest cities on the Continent of Europe, the system of sewerage is of the most primitive order. The city is situated on a broad tidal river—the Garonne—into which empty ten main sewers, about one mile in length, carrying off the water and liquid refuse that run from the gutters, and numerous other sewers, into them. No machinery is in use.

There are no water-closets in Bordeaux emptying into sewer pipes. The water-closets of each house empty into an excavation such as is common in

rural districts, and these excavations are emptied, at intervals of one or two years, by one of two stock companies organized for that purpose, by means of a pipe and steam exhaust pump, the refuse being received into a cylindrical iron tank drawn by two horses.

It will accordingly be seen that the sewers carry off little else than drain and waste water. All the pipes carrying off water from the kitchen and other apartments run underneath the sidewalk into the gutters and from thence into the sewers.

At the corner of every street, is a little hydrant from which, every morning at 8 o'clock, the water is turned on for half an hour, flushing both the gutter and the conduit leading into the sewer. At this hour of the morning, the servants employed in the various households are supposed to wash the sidewalks in front of their employers' houses. This is done by temporarily damming up the gutter with a tightly rolled dishcloth or towel, and by throwing the water over the sidewalk with a wooden shovel.

Inquiries made at the department of public works prove the impossibility of ascertaining the actual or even the approximate cost of the sewers of Bordeaux.

The city, which was founded by the Romans at the period of the Gallic invasion, is traversed from west to east by two narrow streams—the Devèze and the Peugne. These shallow waterways, running into the River Garonne, have always been used as sewers, being walled up at various spots by the people living along the banks.

It may accordingly be imagined that during eighteen centuries the walls have time and again been rebuilt and repaired, while in more recent years, the city has taken a hand in their maintenance. These two main sewers also present a most irregular appearance, being in some places rectangular, in others, cylindrical, and again triangular. Certain points are, of natural sequence, very easily cleaned, while other spots are reached only with the utmost difficulty.

The city is formulating a project to improve and reconstruct the present system of sewerage. There exist in Bordeaux 240 miles of streets and 60 miles of sewers. It is proposed to construct sewers under all the principal, as well as minor thoroughfares, which, at about \$7 a yard, will cost \$3,000,000.

#### LABOR.

As an illustration of the insufficiency, as well as the simplicity, of the present system, it may be stated that only thirty-six men are employed to clean and attend to the sewers. Their wages amount to 70 cents a day each.

#### DEATH RATE.

Notwithstanding the primitive sewerage of Bordeaux, epidemics are rarely known here. This is, no doubt, due to the fact that the city is spread out over a wide area, and that nearly every laborer, no matter how poor, rents a little house for himself and family, instead of living in apartments or

tenements. An average of 7 persons occupy one house in Bordeaux, while in Paris, statistics show that the average is 35; in Berlin, 32; and in Vienna, 55.

A great number of the houses in Bordeaux possess large gardens, while both ventilation and air space are amply provided for.

J. M. WILEY,  
*Consul.*

BORDEAUX, *August 16, 1894.*

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#### BRADFORD.

I have the honor to transmit the following report on the general subject of sewerage in the county borough of Bradford, for which I am indebted to the good services of the town clerk, W. T. McGowen, esq. Being from an official source, the information contained herein may be considered accurate.

#### SITUATION AND AREA.

Bradford is situated in a valley which extends from the moorlands, above Thornton, to the wider valley of Airedale, into which it merges, at Shipley. The area of the borough is 10,776 acres, and the population at the census of 1891 was 216,361.

#### SEWERAGE SYSTEM.

The system of sewerage adopted in Bradford is known as the combined system—sewage and rainfall flowing into the same sewer. It was designed by Mr. Charles Gott, M. Inst. C. E., who prepared a report on the subject in 1859. The sewerage works were commenced in 1862, at which time Mr. Gott was the borough engineer.

The altitude of the borough varies from 240 feet above ordnance datum to over 900 feet; consequently, the inclinations of the sewers are generally very good, and sewer flushing is necessary only in a few districts where the inclinations of the sewers are somewhat flat. In these cases, flushing tanks, with capacities varying from 700 to 2,500 gallons, have been constructed, and Field's patent flushing siphons have been adopted.

The subsoil in the Bradford district is mostly clay, and there is very little subsoil water.

#### CONSTRUCTION MATERIALS.

The sewers are generally constructed of brickwork, plastic-made red bricks being used, except for the inverts of the larger sewers, when Staffordshire blue bricks are used. The mortar is made from Barrow blue lias lime (hydraulic) and engine ashes, in the proportion of one of lime to two of clinkers, ground together in a mortar mill. In special cases, portland cement is used in place of lias lime.

The outfall sewers are circular in form, the largest being 8 feet 6 inches in diameter. Many of the sewers are egg-shaped, and the smaller ones are

constructed with invert block bottoms, vertical side walls of brick, and covered with 4-inch thick stone covers.

Some of the smaller sewers are formed with glazed earthenware pipes jointed with well-tempered clay, and, in certain special cases, earthenware pipe sewers have been laid with Stanford's patent joints.

The largest sewers have, usually, three rims of brickwork; the egg-shaped sewers are built with 9-inch brickwork, and the smaller sewers with  $4\frac{1}{2}$ -inch brickwork.

#### STORM OVERFLOWS.

About thirty overflows have been constructed in various parts of the borough, connecting the upper portions of certain large sewers with the nearest water course, to relieve the sewers in times of thunderstorms and excessive rain.

#### SIDE ENTRANCES AND MANHOLES.

Side entrances are placed at convenient points in the sidewalks for the purpose of giving access to the sewers. These are constructed with vertical brick shafts 30 inches square, placed on the footpath with a horizontal subway connecting the shaft with the main sewer under the center of the carriage way. The shaft is covered by an iron frame and lid, and the total cost is about \$125 each. Occasionally, a manhole is placed over the sewer in the center of the street and surmounted by an iron frame and grate, which cost about \$60.

#### VENTILATION.

All the sewers are ventilated, at intervals of 100 yards, from the crown of the sewer to the street surface by means of shafts formed of 9-inch glazed earthenware pipes surmounted by an iron frame and grate. In about ten cases, connections have been made between main sewers and boiler furnaces, where mill-owners would allow it. These have been fairly successful, but as the cold air rushes into the sewer at so many inlets, the ventilation is limited to the first 200 yards of the sewer nearest the furnace. The ventilation from the sewer to the street surface has been very successful.

#### COST.

The total length of public sewers constructed by the corporation since the commencement of the work in 1862 is 90 miles, at a cost of \$1,350,000. Since 1869, over 40 miles of new sewers have been made in private streets under the public health acts, at a cost of \$310,000, which has been paid by the owners of property in such streets; a further length of 30 miles of sewers has been made by landowners in laying out new streets during the last twenty-five years at an estimated cost of \$225,000, making a total length of 160 miles of new sewers and a total cost of \$1,895,000.

#### LABOR.

At the present time, the number of laborers employed in the main sewerage department is about 40, together with 4 bricklayers, 2 timbermen, and

3 gangers. Formerly, the staff of workmen was much larger. The weekly wages paid are as follows: Bricklayers, \$8.02; gangers, \$7.29; timbermen, \$6.07; ten "bottom men" (laborers), \$5.59; thirty "surface men" (laborers), \$5.34.

The hours of work are forty-nine and a half per week. Wages are paid for Christmas Day and Good Friday, which are kept as holidays.

#### HOUSE DRAINAGE.

About 40,000 houses have been connected with the new sewers since 1862. Each house is required to have separate drainage to the main sewer. All sink pipes, bath and lavatory waters are required to discharge into gullies or disconnecting traps. House drainage is carried out by property owners, under the supervision of inspectors belonging to the sanitary authority, but all public main sewers are constructed by workmen employed by the corporation.

#### DISPOSAL OF SEWAGE.

The sewage is conveyed, by gravitation, to the outfall, at the sewage works, which are situated in the valley between Manningham and Frizinghall, about 2 miles from the center of the town. The present works were constructed in 1873, and the process adopted is that of precipitation by lime and filtration through coke breeze. The precipitation tanks are thirty-four in number, with a capacity of 17,000 gallons each. The coke filters are thirty-four in number, and each filter has an area of 40 square yards. The existing works are not at all commensurate with the requirements of the town, at the present time, and the corporation are now applying for powers to construct new works on a much larger scale, and they are also endeavoring to find a chemical reagent more suitable than lime for the peculiar sewage of Bradford. Persulphate of iron has been tried, and up to the present time, has given the best results, but the cost is excessive. Wool washing and combing form an important branch of the local industry, and the large quantities of grease discharged into the public sewers from wool-combing establishments causes the sewage to be very difficult to treat. The town council are now considering whether the wool combers should not be required to deal with their own trade sewage and extract or recover the grease at their own works.

The corporation are now purchasing additional land as a site for new works, which, when added to the present works, will give a total area of about 40 acres—one-half of which will be appropriated for precipitation tanks, buildings, etc., and the other half is to be reserved in case of need for artificial filter beds of sand, or other similar materials.

The normal dry weather flow of sewage is 10,000,000 gallons per day, and it is intended to provide 12 large tanks to be worked on the continuous system, each tank to be 300 feet long by 60 feet wide, with a total capacity of 8,000,000 gallons, or 80 per cent of the daily dry weather flow. If the effluent from the precipitation tanks can be made satisfactory, without further

treatment, the filter beds will not be made. Seventy per cent of the whole volume of sewage flows to the outfall during the 12 hours between 8 a. m. and 8 p. m. Of the 10,000,000 gallons comprising the daily flow of sewage, about 5,500,000 is trade sewage from dyeworks, wool-washing establishments, etc., and 4,500,000 domestic sewage. The sewage throughout the whole of the 24 hours is found to be distinctly alkaline.

## DEATH RATE.

The death rate, previous to the construction of the new sewerage system, was frequently over 30 per 1,000. The average for the last ten years is 19.37.

*Rate of mortality for the last thirty years.*

Year.	Annual rate per 1,000 living.		Year.	Annual rate per 1,000 living.	
	Births.	Deaths.		Births.	Deaths.
1864.....	39.8	30.6	1879.....	32.7	21.1
1865.....	38.8	27	1880.....	32.3	20.9
1866.....	37.4	27.3	1881.....	33	19.6
1867.....	37.7	24.5	1882.....	31.3	21.3
1868.....	38.2	26.6	1883.....	29.1	18.3
1869.....	37.9	25.6	1884.....	29.1	20
1870.....	39.6	27.7	1885.....	28.98	17.6
1871.....	38	25.5	1886.....	28.64	19.08
1872.....	39.4	25.7	1887.....	27.62	19.86
1873.....	38.6	24.4	1888.....	27.27	17.15
1874.....	40	27	1889.....	26.69	19.11
1875.....	39	27.1	1890.....	25.97	20.14
1876.....	39.2	23.9	1891.....	28.64	21.98
1877.....	38	21.9	1892.....	27.18	17.91
1878.....	35.9	22.5	1893.....	27.58	20.90

## RAINFALL.

The rain statistics for Bradford are shown in the following statement :

Year.	Total fall in year.	No. of days on which rain fell.	No. of days when more than one-fourth of an inch fell.	No. of days when more than half an inch fell.	Greatest daily fall.	Date of greatest daily fall.
	<i>Inches.</i>				<i>Inches.</i>	
1884.....	27.657	204	28	11	1.17	Jan. 23
1885.....	25.699	193	18	9	1.21	Sept. 3
1886.....	35.993	205	32	18	2.13	July 26
1887.....	18.665	160	13	5	0.81	Oct. 9
1888.....	25.646	182	23	13	1.05	Nov. 3
1889.....	22.141	175	25	5	0.59	Mch. 9
1890.....	25.730	194	15	12	1.48	Jan. 22
1891.....	27.303	190	26	9	1.02	Dec. 10
1892.....	28.581	193	19	12	2.72	Oct. 15
1893.....	22.667	173	20	6	1.18	May 15
Mean for ten years.....	26.038	187	21.9	10	1.34	

## PLANS, ETC.

The local government board, some years ago, issued a set of drawings, accompanied by particulars and recommendations, entitled "Suggestions as to the Preparation of Plans for Main Sewerage," by Robert Rawlinson, C. B. This work is sold by Knight & Co., 90 Fleet street, London.

CLAUDE MEEKER,  
*Consul.*

BRADFORD, *September 11, 1894.*

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BREMEN.

The ancient city of Bremen was built on a sandy plain on the right side of the River Weser, about 50 miles from its mouth. The walls of one-third of the city were washed by the Weser, and a moat encircled the fortifications of the remaining two-thirds of the town. The city has long since extended far beyond its ancient walls. The fortifications have been removed, and the old zigzag-shaped moat is now like a winding stream through the center of a beautiful park, encircling the old city and dividing it from the new. The present population is 130,000. The streets are paved with gravel blocks, and are kept very clean.

## SEWERS.

The sewers of Bremen were commenced many decades ago, and were built gradually as needed, without any particular system. Those on the right bank of the Weser, within the city, were restored, in part, by new sewers, and extended during the years of 1889-'93. The water of the old moat, which encircled the old city, is used for flushing the sewers in the city lying outside of the canal. The sewers in the old city are flushed with water from hydrants connected with the water works. There is no separate system for storm water and house drainage.

At certain points in the city, the receiving pipes are not large enough to dispose of the rain water as fast as it gathers, and to provide against flooding the streets backwater cisterns are constructed beneath the street, which receive the flood and discharge it gradually as the sewer pipes can take it. Wash and hydrant water from the houses empty into the sewer direct, but the contents of closets are kept away from them entirely. There is a cistern under each house to receive the discharge from closets.

## COST.

Sewers are now being constructed in the town on the left of the river, at a cost of \$577,150. The total cost of building the sewers on the right of the river was \$465,052.

## DRAINAGE.

The drainage of the city on the right of the river goes to a low basin land, whence it flows through a canal to the river. There is not a free flow



from the basin to the canal, and the assistance of steam pumps is required for most of the year. A large pumping station erected on the left side, at a cost of \$20,230, including the ground, is used as a suction pump for the sewage on that side of the town. It forces the sewage to a higher level, whence it goes through a cemented pipe inlaid with iron (after Mauer) to the river, 5 miles from the town. This has been in operation only a few months, and, consequently, the annual cost of operating it is not known.

The main sewers are built of mason work; their total length is  $7\frac{1}{2}$  miles on the right side of the river, and 7 miles on the left. At some points in the old town, where the capacity of the sewer is insufficient, by-sewers of cement inlaid with iron are put in to relieve the congestion. Earthen pipes are used where the caliber is less than  $1\frac{3}{4}$  inches.

#### HOUSE DRAINAGE.

Connection with the sewers is optional with the property owner; there are about 11,800 connections in the city.

#### LABOR.

There is no regular force of workmen employed to operate the system on the left of the river, the system on that side being still in process of construction. For the care of the sewers, the State furnishes one construction overseer, two foremen, and three workmen, whose duty it is to care for the flushing hydrants, and to work with the general cleaning gang. All other workmen are furnished by a contractor, who keeps constantly employed three gangs of three men each for cleaning the backwater basins before mentioned, one gang of three men for cleaning the receiving pipes, and one gang of three men for cleaning the street water traps. These traps are distributed along the gutters about 4 rods apart at the mouths of the receiving pipes, about 2 feet below the surface of the street; they are about one foot square, made of iron, and can be lifted out and cleaned.

The wage rate is 7.854 cents per hour by day, and 9.996 cents per hour by night. Ten hours constitute a day's work.

I am not able to learn the sum received from the State by the contractor, but if he is called upon to do work not called for under his contract, he receives extra pay at the above-named rate, and according to the time occupied. I am not able to learn the wages received from the State by the over workmen, but the contractor is paying his men at present  $59\frac{1}{2}$  cents per day.

#### DISPOSAL OF SEWAGE.

The entire discharge of the sewers goes to the river, and there is no artificial disinfectant used in connection with it.

Closets empty into cisterns under or beside each building. The cisterns are emptied at regular intervals by men especially charged to do this work. The method employed is that commonly used in cities in this country. A portable engine is used to create a vacuum in a large iron tank, on wheels, and by suction the contents of the closets are drawn into the tanks, which,

being air-tight, afford no possible chance for leakage or odor. The cost of moving depends upon the quantity moved, which is measured by a scale in the tank. It is charged to the occupants of the building connected.

The contents of closets are taken to the country, where they are used for fertilizing purposes. Being mostly liquid, this material is, of course, undesirable in wet seasons, but it is not sought after at any time. The farmers about Strassburg, where manure sells at \$4 a load, really object to using this kind of fertilizer on their land.

The bad effect of having large waste basins under dwellings, and in direct communication with them, through badly constructed closets, is apparent. Besides this, they overflow, leak, saturate soil and walls about them, and create constant odor. The police have authority to order these closets cleaned and examined at any time, and to impose a fine for leakage. It costs \$30 to operate two closets one year in a house in which I am now living. This system has proved to be such a nuisance that a law has been enacted in Bremen prohibiting the further construction of these cisterns, and compelling the use of "turf closets" in their stead.

#### TURF CLOSETS.

The "turf closets" are very excellent in a sanitary sense. Turf, which is found in abundance near Bremen, is powdered finely and medicated. A quantity is placed in a box which corresponds to the water box in ordinary closets, and by an automatic process a given quantity slides into a portable can beneath the closet each time the closet is used. The cans are removed twice a week by city authority. The contents of the can are kept so completely covered with the turf dust that odor is never detected in those in constant use. When the can is removed, another, thoroughly cleaned, is put in its place.

This being a compulsory measure for the rich and the poor alike, the cost of maintaining the system is rated by the value of the property in which they are used. In this way the poor have the use of a closet for about 25 cents a year; the highest price does not exceed \$2. The contents of these turf closets are also used for fertilizing purposes.

#### DEATH RATE.

The death rate in Bremen has never been considered in relation with the sewer system. One of the greatest nuisances I have seen in connection with sewer pipes in many cities in the United States (and with gas and water pipes as well), is that, when these mains are put down, receiving pipes are not connected and laid to the curbstone opposite each lot, and the result is oftentimes that nicely and expensively paved streets are being constantly torn up to make connection with main pipes.

I may say, in this connection, that it may be justly considered to be dangerous if the mouths of ventilators to sewers open at the surface of the ground. Sewers contain all the offal of the community, and, consequently, all the germs of disease which go with it. It is known that disease germs

will not escape from a solution into free air, but it is possible for them to be deposited from the sewers on the surface of the ground at the mouths of these openings through the medium of vapor.

In Paris, where the sewers are freely ventilated, the ventilators serve three objects—ventilators, bulletin posts, and street cabinets, the last being one of the most humane and deserving objects for consideration by American communities. In most American cities, public accommodations of this kind are not to be found outside of hotels and saloons. Men frequent drinking saloons, in some cases, for this reason, and men and women suffer great inconvenience on account of this need in cities.

GEORGE KEENAN,

*Consul.*

BREMEN, *November 19, 1894.*

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#### BRUSSELS.

The city of Brussels is partly situated on a plain crossed by the Senne, a small river, now covered, which was formerly used as a natural sewer to carry off all sewage of such portions of the city as it traversed. Under the head of "The River Senne," I give farther on a translated description of the important work operated on this river.

#### SYSTEM.

The character of the sewerage in use in this city is the ordinary system, flushed with water. It has been in operation since 1848. From 1869, new sewers of oval form were constructed in accordance with the design then adopted, and which, since 1875, has been generally employed. There is no separate system for storm water or house drainage.

#### COST.

The total expended in this city since 1848 for constructing sewers amounts to \$673,242.44.

The cost per running meter (39.37 inches) was about \$9.65.

No separate account for cost of machinery is kept by the authorities; all expenses appertaining thereto are included in total cost of constructing, repairing, and cleaning sewers. The average annual cost of operating the system is about \$10,000.

From 1878 to 1893, inclusive, about 14 miles of sewers were constructed in this city, giving, at present, a total of 68 miles of sewers within the city limits.

There are two main sewers draining the sections of the city divided by the Senne which unite in one large sewer just beyond the city limits. The lengths of these sewers are: Sewer on left side of the Senne 27,837.8 feet; width of *cunette*, 3 feet 9 inches; sewer on right side of the Senne, 12,326.1 feet; width of *cunette*, 5 feet 5¾ inches; great sewer emptying into the

Senne, 5 miles below the city, 18,152.8 feet; total length, 58,316.5 feet. The sewers are built of brick and are oval in form. The interior is finished with a perfectly smooth coat of cement, to prevent the adherence of deposits.

*Amount annually expended for construction, repairs, cleaning, and disinfection of sewers, 1848 to 1893, inclusive.*

Year.	Construction.	Repairs and cleaning.	Year.	Construction.	Repairs and cleaning.
1848.....	\$3,851.31	\$1,735.45	1873.....	\$38,341.96	\$13,997.71
1849.....	3,341.79	1,880.86	1874.....	37,003.50	12,635.00
1850.....	11,332.57	1,228.14	1875.....	19,833.20	12,535.94
1851.....	7,720.00	1,678.71	1876 to 1875*.....	57,900.00	19,300.00
1852.....	7,220.13	1,731.79	1876.....	21,886.20	17,066.99
1853.....	9,078.33	1,725.61	1877.....	25,526.62	16,273.57
1854.....	7,720.00	2,117.78	1878.....	12,068.24	15,893.55
1855.....	1,916.68	1,928.84	1879.....	18,257.61	16,990.75
1856.....	2,473.44	1,929.81	1880.....	6,463.18	14,977.76
1857.....	6,985.63	1,912.92	1881.....	11,596.02	16,141.55
1858.....	11,954.45	1,929.61	1882.....	46,139.16	10,432.42
1859.....	10,580.00	1,929.03	1883.....	46,132.97	10,432.42
1860.....	13,527.56	2,388.18	1884.....	8,210.99	10,720.03
1861.....	13,148.90	2,412.50	1885.....	14,943.41	10,819.16
1862.....	12,506.40	2,412.31	1886.....	5,722.45	10,177.37
1863.....	13,505.17	2,421.92	1887.....	5,722.45	10,177.37
1864.....	13,510.00	2,472.11	1888.....	10,668.07	9,733.38
1865.....	11,580.00	3,570.50	1889.....	5,790.00	9,775.84
1866.....	11,825.30	4,825.00	1890.....	4,832.33	10,313.26
1867.....	5,569.12	4,502.88	1891.....	7,989.62	10,643.56
1868.....	10,243.09	4,825.00	1892.....	3,325.34	10,520.43
1869.....	11,749.65	4,715.95	1893.....	8,663.38	11,354.96
1870.....	13,343.25	3,688.04	Total.....	673,242.44	358,811.76
1871.....	13,120.72	8,816.24			
1872.....	18,416.25	9,110.56			

\* Including expenses incurred in improving and draining the Senne River.

#### HOUSE DRAINAGE.

All the houses in Brussels, with the exception of an insignificant number of the very oldest, are drained by private drains connecting with the street sewers. The drains from the houses are usually 12 inches wide and 13¾ inches high. These were formerly, and are now, occasionally constructed of brick, but, for the past few years, glazed earthenware socket pipes, 8 inches in diameter, corked and jointed in portland cement, have been generally used.

#### LABOR.

From 35 to 40 men are employed in the sewerage department of this city at an average daily wage of 77 cents.

#### DISPOSAL OF SEWAGE.

With the exception of an insignificant quantity, the entire bulk of the city sewage is carried by the two main sewers into the great sewer, just beyond the city limits, a distance of 5 miles, and then discharged into the River

Senne. The solid matter is not separated from the fluid. The small percentage of sewage not disposed of by way of the sewers, is collected and distributed on a parcel of land, a few miles from the city. The city derives no revenue or benefit from the utilization of the sewage employed for this purpose. The cost of disposing of the sewage is included in the annual expenses for repairs, cleansing and disinfection of sewers.

#### DEODORIZERS.

Deodorizers employed are carbolic acid and chloride of lime, which are applied twice or thrice weekly to the sewers by way of the manholes or gullies.

#### DEATH RATE.

The following table shows the death rate per 1,000 during the years 1868-1890:

Year.	General death rate.	Death rate from infectious diseases.
1868-1873.....	29.1	4.6
1874-1878.....	27.7	2.02
1879-1883.....	25.3	1.58
1884-1888.....	23.9	1.59
1889-1890.....	21.9	1.31

I am informed that the sewerage system, now in operation in this city, is satisfactory and meets all public requirements, and that no change is contemplated.

#### THE SENNE RIVER.

Previous to 1867 the Senne flowed uncovered through the most densely populated section of Brussels. The thoroughfares could not be dignified by the name of streets, as they were nothing more than narrow lanes and blind alleys. These quarters were inhabited by the poorest and most wretched of the population of the capital. During the summer months, the Senne was a public danger to health, on account of its use as a public sewer. Matter of every kind stopped and fermented in the river and its various branches. The river was cleaned only once a year, at which time all accumulations and excrements were removed and carted out of the city. The river was also a constant menace, owing to its frequent overflows and resulting disaster to health and property. The river is now covered over, and the narrow, tortuous lanes and alleys are replaced by magnificent boulevards, wide avenues, and squares.

*Arching the Senne.*—The total length of arching is 7,053.7 feet. The arches, separated by masonry, form a longitudinal wall. Each arch is 20 feet in width, and presents a slope of 26 inches. The height of the arch is 8 feet 3 inches. The river, at the beginning of the arching, is provided with two large iron flood gates, to maintain the river at a sufficient level, so

as to transmit the water, when necessary, by one of the exterior branches, into the Willebroeck Canal, which frequently requires this additional supply. Each flood gate, suspended by a rod to a piston, is raised by the pressure of the water, which usually attains at this point  $6\frac{1}{2}$  atmospheric pressure. The work is done simply by turning a cock. There is on each side of the entire length of the arching of the Senne a main sewer, which is divided into two distinct parts, the *cunette* and the vault.

*Receivers.*—The *cunette*, placed lower than the sluice bed of the ordinary public sewer, is 6.5 feet in depth, and has a pitch of  $19\frac{1}{2}$  inches. The upper part, arranged for the free circulation of workmen, consists of the vault proper and service path on each side of the *cunette*. During heavy rainfalls, the water frequently rises above the service path. On account of the different formations of the sections of Brussels drained by two main sewers, the width of the *cunette* employed in each sewer varies as follows: On the left bank, 3 feet 9 inches, and on the right bank 5 feet  $5\frac{1}{2}$  inches. After a stated distance, the two sewers, while preserving the interior plan of construction, without any modification, separate from the Senne and pass under streets lying on both sides of the river. The sewers on the right bank are 1 foot 9 inches higher than those on the left bank. This difference of level is explained by the fact that the land on the right bank descends more precipitately toward the valley than that on the left bank, which is nearly level throughout its extent.

*Main sewer.*—After the junction, there is only one main sewer, which, in construction, is analogous to the sewers described. The *cunette*, however, is larger, being 7 feet 2 inches wide.

*Passage under the Senne.*—Wherever a sewer passes under the Senne, the open space above the service path is abolished, and only the *cunette*, with form suitably changed, passes under the river. The floor of the passage, and of all the sewers emptying into the main downstream sewer, are fixed at from  $7\frac{1}{2}$  to  $11\frac{1}{2}$  inches lower than the other sewers. This slope is made to prevent the stoppage in the sewers during heavy rains. Under the streams, and under the Charleroi Canal, only a part of the arching of the sewers is abolished, and the passage of sluice trucks and laborers is possible. In the passage of the Holbeck, under the main sewer, there are two openings which may be worked simultaneously or alternately.

*Conditions.*—The sewers furnished with rails as well as other sewers are, conditionally, nearly the same. The interior is finished with a perfectly smooth coating of cement. Hollow iron rails, to run the tracks on, are placed on each side of the *cunette*, and rings, in pairs, are placed at regular intervals—that is, about every 82 feet—for the use of the trucks. Hand guards, of galvanized iron, are placed along the sides of the arch, 26 inches above the service path. At every 164 feet, and alternately on each of the two service paths, there is a manhole and an iron ladder for the use of the service men. At certain principal points, the ladders are replaced by easy stairs.

Between the arching and the connecting sewers in the city, as well as at the junctions of isolated sewers with the various branches of the river outside of the city, doors or drain sluices are provided, furnished with valves opening from the sewers toward the Senne. These openings, the lower part of which are placed on a level with the service path, are designed for the purpose of providing an outlet for a portion of the storm water directly into the river. At fixed points, such as the head flood gate, and above the upper part of the different suburban sewers, there are intakes of water furnished with sluices, which, when necessary, permit the introduction of river water into the sewers.

*Cleansing.*—As the ordinary slope averages only about  $11\frac{1}{2}$  inches per kilometer (0.62137 of a mile), it is not sufficient to permit the free flow of sewage, without leaving deposit, consequently periodic cleansing is necessary. The sewers are cleansed by means of sluice trucks, which are entirely of iron. Each of these trucks consist of a sluice similar in form to the *cunette*, and suspended by hinges to a four-wheel truck running on the rails along the sides of the *cunette*. It is of very simple mechanism, having an oscillating screw which permits the sewer man to raise or lower it to such depth in the *cunette* as may be necessary. When the sluice is lowered nearly to the bottom, the waters are kept back, and at a certain height above the level of the downflow of the sluice. The different levels thus produced, while causing the sluice truck to advance, quicken the flow of the water under the sluice sufficiently to clear out all deposits at the bottom of the *cunette*, and to draw towards the downflow all collected matter in front of the truck. There are nine of these trucks employed in cleansing the sewers, distributed as follows: Two for the main sewer, one for the main sewer on the right bank, and six for the sewers on the left bank. Each truck is operated by two laborers.

#### DISPOSAL OF SEWAGE.

The larger part of the sewage is carried by the main sewer a distance of 5 miles beyond the city limits, and then emptied into the Senne. Part of the sewage, as has been stated, is distributed on 96 acres of land near Machelen. When the truck sluice is used in cleansing the portion of the main sewer above Maelbeek, the discharge is effected by pumps and temporary engines of 40 horsepower, which raise the water about 8 feet 2 inches. During heavy rains, these engines are not sufficient; the flow is then direct. The water rises for a time above the service paths along a certain distance in the main sewer.

#### COST.

The cost per running meter (39.37 inches) for arching over the Senne and constructing sewers, was about \$675.50; that of the isolated sewers, containing *cunettes* of various measurements, as follows: Three feet 9 inches, \$67.55; 5 feet 7 inches, \$72.37; 7 feet 2 inches, \$77.20; ordinary sewers, ovoid form, with interior measurement of 6 feet  $5\frac{1}{2}$  inches, an average of \$9.65 per running meter, including all accessory work.

The work of improving, draining, and widening the Senne was commenced in 1867, and, excepting the final utilization of the sewage and some unimportant finishing work, was completed in 1874.

GEO. W. ROOSEVELT,

BRUSSELS, *September 21, 1894.*

*Consul.*

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CARDIFF.

Sanitation has undoubtedly made great progress throughout this country of late years, and it is very gratifying to observe the healthy spirit of rivalry which exists among seaside resorts extended to the inland towns. Nowhere has the question more persistently urged itself upon the attention of the various communities than within this district, for the rapid development of industries within the area of the South Wales coal field and the consequent speedy growth of the population have been phenomenal; and in most places, instead of anticipating the large increase of population by an adequate scheme of sewerage, this has been delayed far too long. Since the last of a somewhat severe series of smallpox visitations (about twenty-three years ago) carried away such large numbers of poor people, the various bodies charged with the sanitary affairs of the respective urban and rural districts have been seriously impressed with the desirability of proper systems of sewerage, and from that time until now, gradual improvements have been effected in this respect, as well as in supplying pure water for domestic purposes. The result has naturally been to considerably lessen the number of zymotic cases, and although typhoid fever is frequently found in certain localities, where hygienic laws, no less than the by-laws of the sanitary authority, are set at naught, the proportion in comparison with the population is certainly low, and is, on the whole, infinitely less than was the case before the improvements were made.

The medical officer attached to each board of health is empowered to have infected dwellings immediately cleansed and disinfected, and the patients isolated within the fever hospital which is found in every populous center; and he is encouraged to speak plainly in his monthly report as to the sanitary condition of his district. In most places what is known as the Notification of Diseases Act is observed, and nothing which commends itself to the wisdom of the board of health is left undone to secure the health of the locality, but here and there plague spots were allowed to remain rather than burden the rates with heavy expenditures, however necessary, so that the county councils, instituted by Parliament a few years since, have, in certain instances, deemed it advisable to appoint a county medical officer. This step has been taken by the Glamorgan county council, whose jurisdiction extends throughout the county, excepting only the county borough towns of Cardiff and Swansea. The medical officer, who is duly qualified as an expert, devotes the whole of his time to the sanitary interests of the county, and has already been the means of stirring certain of the local bodies to good purpose.



I may mention here that toward the close of this year, the parish councils will come into vogue, and will be responsible for performing the functions at present devolving upon the boards of health, urban or rural sanitary authorities, outside of the county borough towns already referred to. The parishes are generally small, and are therefore numerous. Where there is so much of "local option," there is very little approach to uniformity of systems and plans; consequently it happens that, in some instances, localities highly favored by nature are polluted by man to such a degree that the death rate, instead of being low, compares unfavorably with Cardiff, whose population exceeds 150,000.

Strange to relate, the very bad practice obtains in certain localities of draining into small streams, of which there are many meandering among the hills and valleys of Wales, but this practice is so much denounced that its discontinuance is looked forward to. It is curious to note, in respect to the rural districts, how considerable are the fluctuations in the death rate from year to year, so that a low death rate for any one year is no criterion as to the sanitary condition of a district.

I gather from the reports made by the county medical officer that, in most of the populous districts, not only the medical officer, but the sanitary inspectors, who have nothing else to do, are ever watchful for the prevention of disease by insisting upon the general observance of the by-laws. Flushing is regularly resorted to, the supply of water being abundant as a rule, and carbolic acid is everywhere brought into requisition as a disinfectant.

#### SEWERAGE SYSTEM.

Cardiff is an old place, which was content to remain a village for so long a period that when, during this century, it started growing, there was no thought of its present dimensions, to say nothing of what these will reach during the next half century. The sewerage scheme, therefore, is simply one that was forced upon the city corporation by the needs of the town. Briefly, the scheme consists of a connection of sewers having their outlet into the Bristol Channel, on which Cardiff stands. The town being flat, for the most part, the manner of disposal is not perfect (although possibly the best that could have been devised under the circumstances), for when the sewer gas is allowed to escape in the streets the stench is most obnoxious.

Immediately upon my receiving the Department circular, I communicated with the county borough engineer, and beg herewith to append his statement in reply. Although the details are not so complete as I had hoped to receive, the information given will, I trust, prove valuable. I may premise that the cost, owing to the work having been done piecemeal, is difficult to get at.

MR. HARPUR TO CONSUL HOWELLS.

CARDIFF, *August 20, 1894.*

SIR: The commencement of the sewerage system of this borough dates back to 1854, and the system has since grown with the growth of the town, and consists of what is generally known as the ordinary "water-carriage" system. Our borough being unfortunately situated

on very low-lying lands, we have not been able to get rid of our storm waters from the surface of the streets, etc., into natural water courses, as is done in most other towns. All these waters have, therefore, to be admitted to the sewers, and as these carry with them a large amount of sediment, and as the sewers, owing to the low-lying nature of the ground had to be constructed at very flat gradients, it is found necessary to construct them of such a size as will permit men entering them for the purpose of removing the sediment carried into them from the surface of the streets.

The great difficulty with which we have to contend is the storm waters, our sewers being tide locked for several hours during high water; hence, it has become necessary to provide sufficient storage capacity in our outfall sewers for the storm waters during the time the tide doors are closed.

The sewage and storm water are discharged direct into the Bristol Channel, and, owing to the strong currents in the channel, are completely carried away without any nuisance to the surrounding foreshore.

The sewers vary in size from 3 feet 2 inches (egg-shaped), to 10 feet diameter, and are chiefly constructed of brickwork, the latter being 3,269 yards (nearly 2 miles) in length.

All the houses in the borough, numbering about 25,902, are connected with the sewerage system. The number of men employed in the sewers is fifteen, the rate of wages being from 4s. 8d. to 5s. 4d. (\$1.13 to \$1.30) per day.

I may say that our system has been found to work satisfactorily. Of course, as the town has grown it has become necessary to provide further storage capacity for the storm waters, etc. I am at present considering a scheme with that object in view for our western district.

Trusting this information may be of service to you,

I am, sir, etc.,

W. HARPUR,  
*Borough Engineer.*

#### THE RHONDDA VALLEY.

The construction of a sewerage scheme in connection with the town of Pontypridd and other parts of what is known as the Rhondda Valley has recently been completed; and it is significant to note that although the town mentioned is more than a dozen miles from the sea, the scheme adopted, after ample discussion, was to discharge the sewage into the channel by means of iron piping. The fall toward the sea is considerable, and the construction was simple, if costly; but why the example of neighboring boards of health in respect of a "sewage farm" was not adopted, I can not tell, unless it was because land in that locality would demand a very high price. Certain it is that Merthyr Tydvil and Aberdare derive considerable profit from their "sewage farm," particulars of which I have exerted myself to obtain for the purpose of this report.

#### MERTHYR TYDVIL.

The chairman of the committee of management—a justice of the peace—expresses himself thoroughly pleased with the working of the farm, and claims that the scheme is so conspicuously a success that other communities in various parts of the country are inclined to copy. Being somewhat far removed from the sea, Merthyr Tydvil and other towns having necessarily to adopt some scheme for the disposal of the sewage, hit upon the idea to acquire low-lying land within easy distance, and not outside of the district, with a view to utilizing the sewage as manure. Thus was adopted the scheme of filtra-

tion and broad irrigation over suitable drained land; and the county medical officer assures me that, with proper care, there is nothing to fear from the free use of such manure on sandy loam of considerable depth.

The sewerage of the district of Merthyr Tydvil is, on the whole, exceedingly complete, although there are no automatic flushing tanks, nor are the sewer gases brought into contact with jets of burning coal gas as in Neath, where the Keeling-Holman process of ventilation is adopted, and the hollow basis of the street-lamp pillar is used for destroying the gases. The ventilating shafts erected in the higher parts of Merthyr Tydvil are said to be excellent ventilators, and it is beyond doubt that no sooner had they been erected than an appreciable decrease in the number of cases of mortality from typhoid was observable. Moreover, for an industrial center embracing a population comprised almost entirely of the working classes, a large proportion of whom are poor, the prevalence of infectious diseases is now rare and the death rate remarkably low. There is here an abundance of water, and, owing to the hilly nature of the district, the gradient is steep; therefore, the frequent flushings are effectual in dealing with the sewage, and the shafts with the gases.

#### SEWAGE FARM.

The population numbers altogether 140,000, including what are known as the Merthyr Tydvil, Aberdare, and Mountain Ash districts, while the acreage of the farm is less than 500. The balance sheets show that not only is the sewage effectually dealt with, but the profit accruing from the sewage farm is considerable. A portion of the farm is managed by an expert horticulturist, and other portions are let for the most part to annual tenants. The sewers are 4 by 3 feet, oval shaped, and the size of the iron pipe connected with the main sewer, about 3 miles higher up the valley than the farm, is 2 feet in diameter. I have been able to look through many of the figures and find that in 1892, the receipts for land letting, sale of crops, etc., amounted to £2,296 10s. 7d. (\$11,175), while a sum of £199 10s. (\$971) was disbursed in salaries of bailiff and clerk; labor, stores, etc., cost £1,305 19s. 2d. (\$6,354.75), thus showing a profit of £791 1s. 5d. (\$3,844.60). The expenditure for 1893 reached £1,616 9s. 5d. (\$7,865.75), a considerable amount being credited to improvements. The receipts were £2,242 1s. 6d. (\$10,910), so that the profit made was £625 12s. (\$3,044.23), which was more than doubled by a neighboring board for permission to use the system, the said board finding it necessary to do so, and therefore having to pay for it.

Thus the sewage is effectively disposed of in a profitable way, and I am convinced that the system is an admirable one, from several points of view; for there appears to be no room to question the fact that the health of the community is not interfered with, and, on the other hand, the farm land is improved and made to yield a good revenue. In this case there was expended altogether a sum of £80,000 (\$389,280) in acquiring the fee simple of the land, and in completing the entire works incident to the utilization of the 425 acres for the disposal of the sewage. The prospects of a larger

income in the future are good, since Dr. Franklen, an expert on sewerage systems, has stated in evidence that "the farm lands are so suitable for sewage farming that the sewerage of a considerably larger population might, with advantage, be dealt with on the land."

There was no stream available, and the sea being more than 20 miles away, the expense of some 13 miles of 30-inch iron pipes, besides the cost of digging trenches for the same, was saved by adopting this scheme; hence the sum of £80,000 (\$389,280) was wisely expended upon a farm favorably situated close to a large industrial center. Doubtless, under similar conditions, any such farm contiguous to a populous city, and properly managed, would, as in the instance cited, prove a source of considerable revenue where suitable land is available.

#### PUBLIC HEALTH IN PRINCIPAL CITIES.

Cardiff is certainly fortunate in its medical officer and large force of sanitary inspectors, for here we have a floating population daily added to by seafaring men of all nations, yet the death rate is exceedingly low; and as this question of death rate is so closely allied to that of sewerage, the following particulars culled from the weekly return of the registrar-general will doubtless prove interesting:

The return of the registrar-general for the week ending August 13, shows that in thirty-three of the largest towns of England and Wales, which include Cardiff and Swansea, and contain each upwards of 85,000 persons, there were registered 6,508 births and 3,526 deaths. The deaths corresponded to an annual rate of 17.6 per 1,000 persons living.

The rates of mortality in several towns, arranged in order from the lowest, were as follows:

Towns.	Rates.	Towns.	Rates.
Plymouth.....	10.7	Gateshead.....	15.2
Cardiff.....	11.6	Bradford.....	16.8
Halifax.....	11.8	London.....	17.1
Swansea.....	12	Bolton.....	17.2
Derby.....	12.1	Leeds.....	17.2
Newcastle-on-Tyne.....	12.7	Leicester.....	17.4
Birmingham.....	12.8	Norwich.....	17.8
Bristol.....	12.9	Burnley.....	18.4
Portsmouth.....	13.7	Sheffield.....	18.6
Huddersfield.....	13.8	West Ham.....	19.3
Hull.....	14.5	Manchester.....	20.2
Birkenhead.....	14.8	Wolverhampton.....	20.8
Croydon.....	14.9	Salford.....	23.3
Oldham.....	15	Preston.....	30.4
Nottingham.....	15.2	Sunderland.....	30.6
Blackburn.....	15.8	Liverpool.....	30.9
Brighton.....	15.8		

To the principal zymotic diseases 721 deaths were referred to the towns, and corresponded to a rate of 3.6, the towns with the lowest rates being Oldham and Gateshead, 1.1, and Plymouth, 1.2; and those with the highest, Leicester, 8.5; Liverpool, 9.5; Sunderland, 10.7; and Preston, 12.2. The highest rates from each of the diseases were: From measles, 1.1 in Halifax, 1.2 in Bristol, and 1.5 in Sunderland; from whooping cough, 1.4 in Preston, 1.5 in Norwich, and 1.6 in Swansea and Huddersfield; from "fever," 1 in Liverpool and Salford;

and from diarrhea, 7.3 in Sunderland, 7.5 in Liverpool, 7.7 in Leicester, and 9.4 in Preston. The rate from scarlet fever did not reach 1 per 1,000 in any town. The deaths from diphtheria numbered 70, and included 57 in London. Four deaths from smallpox were registered in London, and one in Plymouth.

ANTHONY HOWELLS,

*Consul.*

CARDIFF, *August 28, 1894.*

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#### CONSTANTINOPLE.

The subject of sewerage has received but little attention in this city, owing partly to superior natural drainage. A few underground drains of the most primitive character, and without any regard to scientific principles, have been constructed. The solid matter is collected by carts during the night and early morning, and loaded into barges which are towed out into the Sea of Marmora and emptied.

LUTHER SHORT,

*Consul-General.*

CONSTANTINOPLE, *October 24, 1894.*

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#### COPENHAGEN.

The city of Copenhagen lies on each side of the harbor, which is formed by deepening the natural sound which divides Zealand from the Island of Amager. The entrance is from the north from Öresund (the sound). The sound between Zealand and Amager south of the harbor has but inconsiderable depth, but widens toward Køge Bay. There is no perceptible tide in the sound, but, owing to the high wind which generally prevails, strong currents flow in alternating directions through the harbor, with the exception of the so-called gas works harbor, which is shut in on the south. At a short distance from the east coast of Amager, the Öresund has considerable depth. The principal part of the metropolis is situated on the Zealand side.

The ground rises from a height of 6 feet at the coast to 30 to 40 feet above the level of the sea, intercepted by two hollows, formed by the former moats (which are by degrees being filled up), and by a series of fresh water lakes. There is a different water shed for each of the three divisions, into which the metropolis is thus divided.

#### SEWERAGE SYSTEM.

The sewerage system was commenced in 1860, and is now so far finished that all that remains to be done is its continuation to the new parts of the town as they spring up. The ground is divided into several systems, all of which have an outlet to the harbor. The sewers are laid according to plans previously arranged. They receive both rain and wash water, but no sewage from water-closets, except in a few cases. Everything concerning the

drains is carefully calculated. The dimensions are such that storm water amounting to  $1\frac{1}{2}$  tomme (1.54 inches) per hour may be carried off, and the fall of the sewers is such that by the maximum flow of waste water a velocity of 2 to  $2\frac{1}{2}$  feet per second is reached, and they are therefore in reality self-cleansing. Flushing is rarely needed.

The main sewers are of brick, all interior surfaces being lined with clinkers. Latterly, main sewers made of concrete molding have been used.

The main sewers are either egg-shaped, circular, or circular with pointed bottom, or (in the low-lying districts of the town) sector-shaped and furnished with a bottom channel of simicircular cross section, which is adapted to the quantity of waste water. The smaller sewers of 9 to 18 tommsers (9.35 to 18.50 inches) dimensions are made of vitrified stoneware pipes.

At intervals of 200 to 300 feet, all sewers are connected with manholes without collecting pits, the sewer being conducted through the banquette forming the bottom of the manhole by means of a bottom channel. The water from the street gutters is intercepted by gullies made of concrete moldings, with  $1\frac{1}{2}$  by 1 feet cross section and  $3\frac{1}{2}$  feet deep, over which is placed a cast-iron frame with a wrought-iron grating. The branch drains are constructed by the town up to the front line of the house, while the expenses of the other pipes of the house are defrayed by the landlord, and are made on the best English and American types.

The circumstance that water-closets are not used, and that a strong current frequently flows through the harbor, has made it possible to let the sewage have its outlet in the harbor. The inconvenience connected with this system increases, however, in proportion to the growth of the city, especially because the increase is greatest in those parts of the town where the sewers have their outlets in the gas works harbor, where there is no current. It is, therefore, intended to build intercepting sewers along the coast, after which the sewage will be discharged, by inverted siphons, under the harbor along the Amager side of the town, to be finally pumped into the deep water of Öresund, as there are no areas suitable for irrigation.

#### COST.

The cost of the sewerage system, including building and operation, has, up to the present time, amounted to 2,500,000 Danish crowns (\$670,000). The annual cost of maintaining the system can not be given, as the laborers employed in this department are taken from the general force of the workmen employed by the municipal authorities.

The length of the main sewers I have not been able to ascertain, as they are constantly being increased with the growth of the city.

The sewage is not subjected to any treatment previous to running out into the sound.

#### HOUSE DRAINAGE.

The Copenhagen building act contains but few and insufficient regulations as to house drainage. The sanitary by-law, however, provides that all

house drainage must be conducted according to the regulations laid down by the authority in question. Before work can be commenced, plans of the whole drainage intended must be submitted for sanction, on obtaining which work may be commenced with twenty-four hours' notice. All new drainage work is inspected daily, and no part may be covered without the permission of the inspector.

The following are some of the most important regulations which must be followed in drainage work in the metropolis:

Outside the house and in the yards the drains are constructed of salt-glazed stoneware pipes, the joints made with puddled clay; under the house, iron pipes are to be used.

The diameter is usually four to six tommer (5.9 to 6.29 inches). Y branches only are used. An inclination of 1 to 70, or more, is required.

Disconnection from the public sewer must be procured. The pipes inside the house are made of cast iron or lead. The cast-iron pipes have calked lead joints, the lead pipes soldered joints. All pipes must extend full size 2 feet above the roof, and be far removed from the windows.

The usual diameter for soil and waste pipes is 4 to 2½ tommer (4.3 to 2.6 inches).

A trap must be provided under every fixture, as near the fixture as possible. P or S traps only are admitted. All traps under fixtures, where a large body of water is quickly discharged, must be vented. The vent pipe may enter the soil or waste pipe above the highest fixture, or be extended through the roof. It may be made either of cast iron or lead. In the few places where water-closets are permitted, the soil pipe has a disconnecting trap (interceptor) at its foot. All the water-closet traps must be vented. The water-closets are without pans or valves, of the short hopper, or wash-out, type. They are not to be flushed directly from the water supply pipe, but from cisterns. For the inspection of the pipes, the peppermint test is used.

There is no record of the number of houses drained.

#### DISPOSAL OF SEWAGE.

As no water-closets are allowed to be constructed (except in hospitals), the night soil of the metropolis is removed by means of an obligatory tub system. The tubs are placed in small, detached buildings, with water-tight bottoms, in the yards. In better houses, there are also in the different flats so-called air closets, with soil pail and funnel (type Marino), constructed so that fluid and solid excreta are tolerably well separated from each other. The soil pails are emptied in a special tub in the yard privy. During the night, the tubs are exchanged for clean ones (but this is not always the case), and removed in closed vans, and the contents deposited outside the town.

This report has so far been based upon information obtained from official sources, but I had to interview the manager of a private corporation—the

Copenhagen Renovation Company—which corporation has a contract with the municipality in regard to the removal and disposal of excrement. This company is the oldest and largest, and has “the bulk of the business” on its hands. There are two smaller concerns, which work on the outskirts of the city. The company is entirely a private business concern, but is controlled by the authorities, for whom its books must be open and accessible at all times.

The city pays annually 10 kroner (\$2.68) for the removal of each tub, and the number of tub removals by this company is 23,000. As a matter of course, they are not emptied every night, but generally twice a week.

The refuse is now being sent by rail to various places in Zealand; but, while the State Railroad has agreed to carry it, continual obstructions are placed in the way, owing, perhaps, mainly to the character of the freight which they have to haul, although the company has done everything to make the carrying of its freight so secure that no inconvenience can be experienced by the traveling public or by the railroads. Side tracks have been laid at enormous expense by the company at the stations, to which the refuse is carried. The cars are made especially for the purpose, being airtight and supplied with pumps on the Stuttgart system.

At the points of delivery, large containers have been built on the same system, and from these the refuse is sold to the farmers. The health authorities are so strict, however, that the farmers, in many cases, find it impossible to comply with the requirements. Here, again, the company finds so much difficulty to contend with that the business of disposing of the refuse for the purpose of manuring is far from profitable.

The income derived by the company from the sale of the refuse amounted last year to 39,000 kroner (\$10,452), the freight being deducted. The company owns a track of land of 350 acres, which it manures with the refuse, and on which it raises hay, but the scheme has not proved profitable.

It has long been recognized that, from a sanitary point of view, the tub system is not commendable. Various schemes have been proposed to improve the system, and only a short time ago it was intended to build mills, where the refuse should be subjected to a process that would make it a dry and nonsmelling manure, but a storm was raised against this proposition by the landlords, who found that their taxes would become too formidable, and the matter ended there. There seems now to be only one way open to do away with the present obnoxious system, namely, water-closets on the American plan. It appears that this system is meeting with general approval, and it may, therefore, be reasonably expected to result in the abolition of the tub system. In a part of the city which has risen during the last few years, permission has been obtained to erect water-closets, but many years are likely to elapse before the tub nuisance will be entirely done away with.

The yearly cost of removal of house and street refuse and night soil amounts to 400,000 kroner (\$107,200).



The drainage and the removal of refuse and soil in the provincial towns is organized after the metropolitan pattern, but much is left to be desired in many places.

Nakskov is the only town in Denmark where water-closets are allowed and introduced to a greater extent. In this town, the sewage is lifted by pumping and used for irrigation. Complete regulations for house drainage on the American plan are also carried out there.

No deodorizers are used for the night soil.

#### DEATH RATE.

As to a comparison of the death rate before and after the adoption of the present system, no statistics are obtainable.

ROBERT J. KIRK,  
*Consul.*

COPENHAGEN, *November 9, 1894.*

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#### DUBLIN.

The corporation of Dublin have had under consideration for some years the improvement of the sewerage system of the city, and the present council are now passing under review plans of engineers for the disposal of the city sewage, with a view to entering upon comprehensive works for the more thorough sewerage of Dublin, and the disposition of the sewage so as to relieve the River Liffey and its estuary, which are dependent upon the tides for the cleansing of the noisome flood now poured into them. The situation at the present time is this: The city of Dublin is divided by the Liffey, which serves as an open sewer for receiving all the sewage of the city. The river is tidal throughout the entire city limits, and although the tides rise at the river mouth from 9 to 11 feet at neap and from 12 to 14 feet at spring tides, and carry into and out of the river daily with the ebb and flow, probably, not far short of 200,000,000 cubic feet, a volume of 30 or 40 of sea water to one of sewage, the river remains imperfectly cleansed, and is an offense both to sight and smell. The city is an ancient one, and the sewerage system has come by piecemeal. The private drains have been made by the owners, each after his own notion, and the earlier public drains were put in without much attention to scientific or practical principles. The result is that the subsoil underlying the city is believed to be impregnated and noxious with sewage escaped from defective drains. Malarial forms of fever, especially enteric, are never absent from the city, and the death rate is higher than in almost any other European city.

The sewerage system in use is the ordinary water-closet one, with no separate drains for storm water. There are about 120 miles of principal public sewers draining 29,368 houses occupying an area of 3,542 acres. This includes only the city proper, as the principal suburbs have their own separate

systems, but the sewage from both city and suburbs empties into the Liffey or the Liffey estuary. The public sewers are either of masonry or stoneware, the first of oval shape and in size from 6 by 4 feet to  $2\frac{1}{4}$  by 2 feet. The stoneware drains are chiefly one foot in diameter, some few having a diameter of 18 inches.

A reconstruction of the sewerage system was carried out from 1850 to 1870, but no data can be given of the exact cost, as some of the drains were laid previous to the corporation assuming control.

#### COST OF MAINTENANCE.

The cost of construction and maintenance for the forty years ending 1892 was \$1,899,156. The present cost of maintenance averages \$46,232 annually. The staff employed numbers 123 men, of whom 98 are laborers, receiving, on an average, \$4.18 per week, or about 73 cents per day. As the sewage is emptied into the Liffey and carried out to sea by the tide, no separation of solid from liquid is attempted, and no deodorizers are used.

#### HEALTH.

It is believed that the health of the city population has improved since the improved sewerage system was completed, but as the private drains, especially in the tenement districts, are still very imperfect, the improved health is attributed to other causes more largely than to the improved public sewers. Chief of the auxiliary causes is the Vartry water supply, brought through iron pipes from the Wicklow Mountains, about 20 miles away, and furnishing a daily supply of nearly 50 gallons per head of the population. Of importance equal to the water supply, is the attention given to sanitation by the cleansing department. This department employs over 500 men and about 140 horses, and cleans not only the streets and public premises but removes all refuse from private stable yards, gardens, ash pits, etc. The manures collected are sold to farmers, and any surplus is carted to the Liffey with other refuse and sent out by boat to the deep sea. This department cost the city, in 1893, about \$200,000.

#### PROPOSED SYSTEMS.

As has been said, different plans for the improvement of the sewerage system have, at various times, occupied the attention of the council. Some of these plans are of great interest, as they were originated by eminent engineers of much experience. For a long time, the scheme which had most support was one put forward by Messrs. Hassard & Tyrrell, well-known engineers of London. Their plan was fully entered into by a royal commission in 1879, but was not indorsed because of the great cost attached to it. Their scheme has recently been revived and new interest added to it from the fact that another plan adopted by the council has met with an obstacle in the failure to secure certain Government property necessary to the scheme. The plan put forward by Messrs. Hassard & Tyrrell is to construct low-level sewers to a point outside of the city where the sewage is to

be pumped into a high level outfall sewer, having an inclination of 1 foot 6 inches to the mile, and thence conveyed to a point on the east headland of Howth, where, in the language of Mr. Hassard, it is proposed "to deliver the sewage in a constant stream into the sea at all times of the tide at an uninhabited and precipitous part of the coast where the water is deep and the tidal currents run with considerable velocity. \* \* \* The tidal currents are strong, and their directions completely refute the assertion that sewage discharged there at any period of the tide can ever be carried in the direction of Howth."

They estimate the cost as follows: First cost of project, about \$1,800,000; annual cost of operation, \$16,500. To this plan, it has been objected by other engineers that the first cost would reach beyond \$2,000,000, and that experiments with floats put in at the point of outfall advised by Messrs. Hassard & Tyrrell indicated that there were no constant tidal currents, such as claimed by them, and that, consequently, there was no assurance that the sewage, if carried to that point, would not pollute the neighboring shores.

In 1891, the corporation submitted the several schemes which were before them to Mr. Chatterton, an eminent engineer of London, who had carried out drainage schemes at Torquay, Cardiff, and elsewhere, and who is considered an authority on the subject. From private papers and correspondence to which I have had access, I am enabled to give his plan, which was received with favor by the corporation, and, as is generally understood, adopted by them, but now likely to be abandoned because of the failure of the corporation to purchase, at what they consider a reasonable price, a piece of property, necessary to the scheme, known as the Pigeon House Fort and belonging to the Government. Mr. Chatterton favors a plan of precipitation, known as the "White Bank scheme," as follows:

To conduct the city sewage into a main outfall sewer 8 feet in diameter, having an inclination of 1.43 feet per mile, along the south side of the Liffey to Ringsend, where there would be a pumping station on the South Wall intake. The sewage would here be lifted 18 feet, and would be conveyed by an outfall sewer constructed along the South Wall intake parallel to Pigeon House Road, and south of the submarine station and Pigeon House Fort, and along the South Bull Wall to the east side of White Bank.

It would be sufficient to reclaim and protect 12 acres for the erection of precipitation works. Precipitation tanks and other necessary works would be erected on this site, and the sewage would be treated by the lime process. Sufficient storage accommodation would be provided, so that the clear effluent will only be discharged during the ebb tide.

I believe that the most economical manner of disposing of the sludge will be to pump the wet sludge from the sludge reservoir into a specially designed self-propelling sludge vessel or hopper barge, that would be towed to sea, and the site selected offers great facilities for getting the sludge into the vessel.

By this scheme the clear effluent, after precipitation, would be discharged on the ebb tide into an enormous volume of water, and in about one hour would be carried outside the harbor.

No damage could be caused to any interest, public or private, and the whole of Dublin harbor would, in ordinary weather, be relieved from the discharge of crude sewage, with the exception of that from Rathmines and Pembroke district.

It is interesting to note the estimates of expense made by Mr. Chatterton, which are as follows: First cost of sewers, about \$700,000; precipitation tank, buildings, etc., \$300,000; pumping machinery, etc., \$100,000; contingencies (10 per cent), \$110,000; total cost, \$1,210,000; estimated annual cost of pumping, about \$8,700; precipitation of sewage and removal of the sludge to sea, about \$25,000.

Mr. Chatterton bases his estimate of precipitating the sewage upon the London cost, which is stated to be \$4.56 per 1,000,000 gallons, and the cost of loading and conveying the sludge to sea at \$2.18 per 1,000,000 gallons of sewage.

#### UTILIZATION OF SEWAGE.

It may be noted that in all the schemes for dealing with the sewage in Dublin, no plan proposes to use it for irrigation purposes. Mr. Chatterton estimates the quantity of wet sludge from Dublin at about 240 tons daily, which, he thinks, would yield about 48 tons of pressed sludge cake. He estimates the cost of this pressed sludge at about 60 cents per ton, and says:

I do not believe that the corporation would be justified in counting upon any return worth speaking of from the sale of the sludge cake, nor do I think it would be desirable to reclaim land in this neighborhood with it, even if power to do so were obtained.

In February, 1870, the royal commission on the pollution of rivers, reporting upon the utilization of sewage, reached conclusions adverse to the profitable employment of sewage for fertilization. I give in abridged form the substance of their remarks:

Solids may be extracted without difficulty by filtration. As the solids, however, only contain one-seventh of the valuable constituents, the process, though simple, is not remunerative.

The polluting quality of the remaining liquid is not substantially diminished.

The lime treatment of sewage has been a conspicuous failure at Tottenham, Blackburn, and Leicester, both as regards the manufacture of valuable manure and the purification of the offensive liquid.

The royal commission, in a report made in 1884, seemed to hold to conflicting views as to the profitable utilization of sewage. In summing up the matter, they say that the most likely mode to obtain a profit from sewage is by irrigation, but that the purification of the sewage can not be attained with the present knowledge.

From the report of Mr. Spencer Harty, city engineer of Dublin, made in 1891, to the Dublin main drainage committee, on the main drainage of towns in England and Scotland, I extract the following as bearing upon the profitable utilization of sewage:

Sir Benjamin Baker and Mr. Alexander Binnie, chief engineer of the London county council, in a joint report on the main drainage of London, while admitting that the profitable use of sewage as sludge upon marsh land is a debatable question, say: "We do not think it would be justifiable at present to make the utilization either of sewage or sludge an essential part of any works which may be proposed for the improvement of the main drainage system

of the metropolis, as it is a matter of general knowledge that sludge, whether in a pressed or unpressed state, can not at present be disposed of in the open market, and that it has to be disposed of at a loss or given away."

Mr. Frederick Ashmead, borough surveyor of Bristol, holds :

(1) That none of the existing modes of utilizing town sewage are satisfactory.

(2) That towns on the seacoast or tidal estuaries may be allowed to turn sewage into the sea, and are justified in doing so on the score of economy.

In a joint report, the master of works and the inspector of the cleansing department at Glasgow, in discussing the disposal of sludge, advise mixing it with manurial city refuse and the sale of the same to farmers as the cheapest mode of disposal, but add :

Besides, although we do not consider the intrinsic value very great of sludge from any chemical precipitation process which has as yet come within the range of practicability, the present recommendation would not preclude your taking advantage of it should chemical science, in future, bring about a feasible means of enhancing its value, by obtaining such an increase in its percentage of ammonia as will justify the cost of preparing it as a concentrated manure.

Mr. Baldwin Latham states that, at Aberdeen, the attempt to utilize sewage as a financial venture was a failure.

As to the effect upon the public health where sewage is discharged into rivers, sea, or estuary, the prevailing opinion of those in authority seems to be that no evils result from the practice, or, at least, evils of so small magnitude as to be overbalanced by the ease and cheapness of this manner of disposal. I have before me reports from a majority of the English and Scotch cities situated upon or adjacent to the sea, and all favor the dumping of sewage into the sea, in a crude state, if location permit, and, if it does not, then by precipitation and conveyance of the sludge to sea.

NEWTON B. ASHBY,

*Consul.*

DUBLIN, *October 26, 1894.*

## EDINBURGH AND LEITH.

### EDINBURGH.

The city of Edinburgh, which, at the time the last census was taken—April, 1891—had a population of 264,787, has, according to the latest official estimate (calculated for the middle of the year 1894), 270,588 inhabitants. It has a service of water at the rate of 35 gallons per capita per day of twenty-four hours. The city, which, with Leith, is practically a seaport, is so situated as to allow of a very effective system of sewerage which can be maintained at a low annual outlay. The site upon which it is built, though very hilly and irregular, is in all places considerably above the level of the Firth of Forth, a tidal estuary of the North Sea, about 7 miles wide, which is nearest in a northerly direction, being thus about 2 miles from the central

part of the city. The proximity of this branch of the sea, the elevation of the city above the water, and the great amount of the annual rainfall in this district all contribute toward making the effective sewerage of Edinburgh a less difficult task than is the case in most cities of equal size.

*Disposal of sewage.*—The elevation of the lower parts of the city varies from 60 to 100 feet, and of the higher parts from 200 to 300 feet above the level of the Firth of Forth, into which, by means of two main outfall sewers, almost the whole of its sewage is discharged some considerable distance beyond low-water mark. The water-carriage system is the only method in use, and as the gradients are exceptionally good and the flushing service copious, the sewers are self-cleansing. The remainder of the sewage—a comparatively small proportion—is utilized by the owner of a large suburban estate lying between Edinburgh and the seashore, for the purpose of surface irrigation. In making use of this part of the sewage, no separate system is practiced. Regarding this great sewage farm, I may mention that it consists of flat, green meadows, their broad expanses being only broken by narrow water courses. These pastures have the appearance of being fertile. The experimental utilization of the sewage on this estate is carried out on a large scale, and has, I understand, proved successful. Save on this estate, no attempt is made to use any portion of the sewage.

With well-graded sewers, and with all soil and waste water carried away swiftly and efficiently, Edinburgh is fortunate in the fact that local circumstances have made available a ready, simple, and, it is believed, a permanent solution of the sewage problem. The system not only works well and gives general satisfaction, but no other system of disposal is known which costs so little. There is discharged into the Firth of Forth every twenty-four hours 10,000,000 gallons of sewage; its momentum impels it continually seaward, and as it does not cause a nuisance, no complaint relative to its discharge has ever been raised.

*Death rate.*—I am informed that, within the last thirty years, the annual death rate has been reduced from 28 to 18 per 1,000; and since a number of the deaths occurring each month are of persons brought to Edinburgh from other places to obtain treatment at the city infirmaries—which are among the largest in Great Britain—it will be seen that the actual annual rate is even less than this.

Like some of the other cities in Great Britain, Edinburgh is more or less distinctly divided into an old and a new town. It is a fairly compact city, taking into account its population, since it measures only about  $2\frac{1}{2}$  miles in length by practically the same distance in breadth.

Although many of the houses in the old portion of the city are overcrowded—the number of the residents in some of the poorer quarters being very large in proportion to the accommodation—yet, owing to the good condition of most of the house drains and main sewers, and also of the nature of the climate of southern Scotland, which is neither oppressively warm in summer nor very cold in winter, even this portion of the city is fairly healthful.

*Cost.*—As the sewerage system has grown gradually with the extension and enlargement of the city for at least two centuries, it is impossible to state the total cost of the sewers. The annual cost of maintaining the present system is reckoned at from \$14,600 to about \$19,500. Within the last five years, \$973,300 have been spent in constructing the main outlet sewers to the sea, the cost of which undertaking has been partly shared by Leith.

The materials of construction are of various kinds. In the new town, or more modern portion of Edinburgh, there are some sewers built of ashlar masonry with hollowed stone sills, and some of brickwork in cement, either oval or circular in cross section; others are made of vitrified stoneware, while, in some places, cast-iron pipes are used.

*House drainage.*—There are 51,000 houses in the city, and great care is bestowed on the drainage and sanitary appliances of all of them, both new and old. A tenant of any house in the city can, on proper application to the city inspectors, have the condition of the drains and sanitary arrangements of his house examined and tested, and, if found faulty, repaired or reconstructed at the expense of his landlord. In compliance with such applications, 6,384 houses were examined in the year 1893-94. Prior to the leasing of a house, it has become a very common practice for the parties to stipulate as a condition of the lease that a certificate as to the satisfactory sanitary condition of the premises shall be obtained from the public authorities. The vital necessity that the drainage arrangements and sanitary appliances of every house in the city should be so certified, has been strongly urged by the burgh engineer—Mr. John Cooper—to whom I am, in a large measure, indebted for the particulars which I am in a position to furnish relative to the sewerage of this city.

The staff engaged in the inspection of the drainage and sanitary appliances of existing dwelling houses consists of four inspectors and twelve workmen; their combined wages amount to \$5,972.17 per annum. The inspectors are reliable experts, each of them being an experienced plumber.

Plans of houses to be constructed must be submitted for approval (among other authorities) to the court of an official known as the "Lord Dean of Guild," who may, should he see fit, insist on the alteration of the plans, or, in the event of his considering it to the interest of the public to do so, he may refuse to allow of such construction, and, without his permission, no building can be erected. The drainage of houses in course of erection, as well as the general construction, is carefully supervised by a district inspector. In each house the drainage system is securely trapped off from the main sewer, and each system is carefully arranged and thoroughly ventilated, and is tested from time to time by the public authority. If found satisfactory, it is certified as being sufficient.

#### LEITH.

The town of Leith, though distinct so far as municipal government is concerned, is, nevertheless, in other respects, only a commercial and mari-

time suburb of Edinburgh. The centers of the two cities are about a mile and a half apart.

*Sewer system.*—The nature of the ground upon which Leith is built differs very much from that of the site of Edinburgh, being fairly level save for a slight slope toward the Firth of Forth. The modern streets of the town are spacious and well built, and great improvements have been made in them in recent years. The sewers are on the ordinary plan, flushed with water monthly or oftener if required. They are laid to such gradients as to be self-cleansing, thus requiring very little attention. There is only one system of sewers in the town, and that receives both storm water and house drainage.

The length of the main sewers is about 30 miles. Some of the sewers consist of round, vitrified fire-clay pipes, which range from 10 to 15 inches in diameter; the remainder are egg-shaped, of brickwork and cement, and have fire-clay or stone sills. Some of the inverts are brickwork and cement. New sewers are, from time to time, being constructed, either owing to the opening of new streets or to other causes. There are approximately 16,000 houses in the town, and they are drained by means of 6-inch pipes trapped off from the main sewers.

*Cost.*—The cost of sewerage works from the year 1862 until the present time, has been about \$340,655, or about \$10,706.30 per annum; but in addition to this amount there has been spent, in conjunction with the city of Edinburgh and part of the county of Edinburgh or Midlothian, a sum of over \$1,459,950 on intercepting sewers for the purification of a small river called the Water of Leith, which flows through the two cities. This latter work was a very large undertaking, and is, of course, to be considered entirely separate from the ordinary cost of the sewerage of the town.

*Population.*—The population, according to the census of April, 1891, was 69,956, and an official estimate to the middle of 1894 places the number of inhabitants at 72,003. As is the case in most of the seaport towns and cities in Great Britain, a considerable proportion of the inhabitants are of foreign birth.

*Labor.*—There are no regularly employed laborers to keep the sewers in repair. The corporation occasionally hires three or four men who are each paid from \$4.87 to \$7.30 per week of 51 hours.

*Disposal of sewage.*—No attempt is made to obtain revenue from the sewage; it is discharged directly into the sea and is not utilized in any way; neither is there any process of deodorizing the sewage.

*Death rate.*—The decrease in the annual death rate which has followed the adoption of the present system is very small as regards the whole town, but the decrease in the vicinity of the river, spoken of above, is considerable, and naturally so, as the water is now comparatively pure, whereas formerly it received the sewage, as well as the refuse of a portion of Edinburgh and Leith. Such matter as was thus disposed of before the intercepting sewers were constructed is now discharged into the Firth of Forth. The sewers, by means of which it is so discharged, are laid parallel with and along the margin of the river.



## ACKNOWLEDGMENTS.

I am indebted to a considerable extent to Mr. William Beatson, the burgh engineer of Leith, for the particulars which I have given in regard to the sewerage of the town.

I take this occasion to acknowledge the services of Mr. Frederick P. Piatt, vice and deputy consul, subsequent to the death of Consul Underwood, and prior to my assumption of the duties at this consulate, in obtaining much of the foregoing matter.

ROBERT J. MACBRIDE,  
*Consul.*

LEITH (EDINBURGH), *December 29, 1894.*

## FLORENCE.

The sewerage system in use in Florence consists solely in the ordinary course of sewers flushed with water, and is almost a reproduction of Engineer Belgrand's system, adopted by the city of Paris about the year 1871. Since that time, the square section is gradually being changed into oval form; the ancient flat-bottomed house drains have been abolished, and well-trapped, air-tight, tubular metal or glazed earthenware pipes are substituted, with a slope of 3 per 1,000. The same system has been adopted for the house waste-water pipes. Any communication between the two has been forbidden, and various illegal overflows from cesspools have been stopped. The new sewers have been pushed toward completion in the old drain quarter, and, in good time, they will entirely replace the old, shallow, leaky drains which are more or less filled with deposit.

## COST.

The cost of the actual sewerage system, when completed, is estimated at about \$2,800,000. No market value can be given to the unwieldy machinery in use. The annual cost of operating the system may amount to \$6,000. The main intercepting sewers measure 12,080 linear meters (7.3 miles), built with brick, stone, sand, hydraulic lime, and portland cement.

## HOUSES DRAINED.

The houses drained in the ordinary method number 12,744.

## LABOR.

The average number of laborers employed in the sewerage department is thirty, at from 40 to 80 cents per day.

## DISPOSAL OF SEWAGE.

The night soil, properly mingled, is removed in three different ways, viz: (1) In casks of 10 gallons each, by husbandmen, who pay a few centimes per cask, and carry it to their fields; (2) pumped by an old, clumsy, revolv-

ing apparatus, in an hour or more, often leaving deposit behind. The owner of the machine is paid 20 cents per cask of 20 gallons; (3) pumped by an ordinary steam engine, emptying the cesspools in fifteen minutes. The owner of the engine is paid 40 cents per barrel of 25 gallons.

The first method is exclusively operated at night; the others late in the evening and early in the morning. All leave the whole neighborhood permeated with foul odor.

The sewage is carried directly to the fields or to reservoirs, 2 or 3 miles outside the city gates, and sold at from 50 cents to \$1 per 250 gallons. It is much sought by the farmers as a good fertilizer, especially if conveyed directly to the fields.

#### DEODORIZERS.

For deodorizers, by directions of the municipal office of hygiene, solutions of lime, sulphate of iron, and mycrobina, are used.

#### DEATH RATE.

Since the adoption of the existing system of sewers, the average death rate per 10,000 inhabitants, in the city of Florence, has decreased in the proportions shown by the following table:

Year.	Rate.	Year.	Rate.
1871.....	380	1881.....	286
1872.....	353	1882.....	303
1873.....	367	1883.....	296
1874.....	365	1884.....	250
1875.....	345	1885.....	269
1876.....	322	1886.....	277
1877.....	331	1887.....	289
1878.....	349	1888.....	261
1879.....	331	1889.....	241
1880.....	341	1890.....	251

SPIRITO BERNARDI,

FLORENCE, *September 15, 1894.*

*Vice-Consul.*

#### FRANKFORT.

For centuries preceding the construction of the present sewer system of Frankfort, which was commenced in 1865, the drainage of the city was carried off by surface gutters which flowed into the River Main and into the moat, which, debouching at either end into the river, followed the outer base of the fortification walls which encircled the ancient town. As the city outgrew this fortress wall, the moat was arched over with masonry and the surface leveled, creating a covered canal of irregular depth and width, generally unpaved, and utterly inadequate for the purposes of modern sanitary drainage. Frankfort had, in those days, a yearly death rate from typhoid fever ranging from 100 to 110 per 100,000 inhabitants, and the need of an

improved and modernized drainage system and water supply was obvious and urgent. The work on the new sewers was begun in 1863, and the first house connections were made in 1867. In 1887, 42 per cent of all houses in the city had sewer connections, and this proportion has now been increased to 96 per cent of all buildings within the corporate limits. A plentiful supply of pure, soft water was brought from the Vogelsberg, about 25 miles distant, in 1872. This has been supplemented since by the water from a large spring in a forest near the town, and Frankfort is now one of the best-watered and best-drained cities of its class in Europe.

#### SITUATION.

Frankfort is built on a sandy, alluvial plain, sloping gently southward to the River Main, and having barely sufficient altitude to give the requisite fall to carry off and discharge the drainage. In order to best utilize this fall, the sewers are built in two divisions, or systems, one of which—the upper system—drains the higher portions of the city, which lie not less than 10 feet—a cellar's depth—above ordinary high-water mark in the river. The other, or lower, system drains the lower portions of the city, where the current in the mains is liable to be affected by periodical floods, and its principal outlet channel is extended far down the river and discharges below the large dam which backs up the waters of the Main in front of the city for the purposes of navigation. The fall in the main sewers of the upper system varies from 1 in 50 to 1 in 100; in the lower network, the grade is much lower, ranging from 1 in 300 to 1 in 1,000.

#### SYSTEM.

The city of Frankfort is drained by a system of combined sewers, the two networks being each complete and independent. All main and branch sewers are laid down carefully to grade and provided with flushing gates and penstocks, by which they are kept well flushed and cleansed. No resort has been had to pumping, as in Berlin, since the altitude of the site made it possible to carry off all drainage to the precipitation tanks and the subsequent outfall by gravitation. At the outfall, the sewage is treated with chemicals, and the sludge is used as fertilizing matter for land.

The works were begun in 1865; the first lines of sewers were put in operation in 1867 and thenceforward gradually extended over the whole area of the city, so that, in 1884, 75 per cent of all houses were connected with the sewers, and this percentage has been increased to 96 in 1894.

Separate systems for sewage and rain water have not been adopted. The sewers receive all rain water, house, and industrial sewage. The rain water is discharged by storm outlets into the river.

#### COST.

The total cost of the sewers of Frankfort, up to the end of 1893, was \$4,225,000. The system in use does not require any pumping or other machinery excepting that used for mixing chemicals and treating the sewage

at the outfall works. The cost of this machinery was \$6,854, and the annual cost of working it and disposing of the sewage is \$28,560, which includes all working expenses, labor, chemicals, repairs, etc. A revenue of from \$525 to \$650 has been derived annually during the past three years from the sale of the matter gathered by the gratings, and from the sale of the produce of the experimental garden.

#### UTILIZATION OF SEWAGE.

Thus far, the sludge derived from precipitation by chemical means has been given away, and the demand for it is quite equal to the supply, farmers in the neighborhood being glad to obtain such fertilizing matter for the cost of hauling it away. The board of managers has, therefore, decided to charge 4 cents per ton for the sludge, and this regulation will take effect from the beginning of next year. The precipitants used at the outfall works are sulphate of alumina and lime. The precipitation is effected in long, subterranean tanks or galleries, about 7 feet deep at the upper end, 10 feet deep at the lower end, 20 feet wide, and about 250 feet long, all of which are vaulted over with masonry.

#### DEPTH OF SEWERS.

The total length of both networks of sewers is 236,190 yards (134.18 miles). They are built of brickwork laid in cement mortar on invert blocks of vitrified stoneware, cement concrete, and sandstone, the smaller lateral branches for minor streets being stoneware pipes of 12 to 15 inches diameter. These pipe sewers comprise about 10 per cent of the entire system; of the remainder, about 50 per cent are brick sewers with openings of 2 by 3 feet and walls 4.5 inches thick. The main outfall sewer is 7 feet high and 5 feet 4 inches in width. All the brickwork sewers are built in egg shape.

#### HOUSES DRAINED.

The total number of properties drained at the close of 1893, was 8,993, comprising 10,179 houses, with 33,727 lodgings, equipped with 40,964 water-closets. The approximate length of house drains or connections with the sewer is 246,042 feet. House drains are of round, earthenware pipes, ranging, according to the size of the buildings, from 4 to 9 inches in caliber. Inside the buildings, the pipes are mainly of cast iron, jointed with lead, and all down pipes are carried up vertically through the roof as ventilators. The house drainage is not on the so-called "disconnected system," but the pipes form a continuous and uninterrupted connection between the street sewer and the atmosphere above the roof, so that perfect ventilation is secured by a free and continuous circulation of air. All pipes inside of buildings are made air and water tight, and are efficiently trapped.

#### LABOR.

The sewers are kept clean by flushing, the work being done by a flushing gang, including ten men and one foreman, whose annual wages are: Fore-

man, \$428.40; the men, \$285.60 each. Besides these, there is a gang for cleaning the gutters which comprises two foremen and from six to nine men, with two to three carts, so that the whole annual cost of keeping the sewers and gutters clean, for a population of about 204,000 inhabitants, is \$9,520. The sewage arrives at the outfall precipitation works in a fresh condition, from three to four hours, on an average, after it has passed into the sewers. Here it is treated in settling tanks, as already described. The mechanically suspended matter and part of that held in solution are separated from the water by mechanical and chemical precipitation, and the water discharged into the river.

#### SEWER VENTILATION

No part of the entire system seems more perfect than its ventilation, which is effected by grated openings in the streets over the main sewers, through which a constant supply of air is admitted. This air passes out through the vertical pipe openings of the houses, and through tall ventilating shafts, of which there are several in the higher portions of the city, sufficiently high to create a draught which maintains a constant circulation of fresh air throughout the entire system.

#### DEATH RATE.

In examining the statistics which record the effects of the drainage system upon the health of the community, it must be borne in mind that the character of the population in Frankfurt has greatly deteriorated during the past thirty years. Down to 1866, no person was allowed to acquire a fixed residence in the city who could not show himself to be in receipt of a specified income, and pay a bonus of 1,000 gulden (\$404) for the privilege of citizenship. The people were, therefore, almost without exception, of the well-to-do classes, able to live comfortably, eat wholesome food, and have adequate medical attendance in case of illness. The proportion of children was below the usual average, which had a noticeable effect in restricting the percentage of mortality. Since the annexation of Frankfurt to Prussia in 1866, these restrictions have been abolished, with the result that the number of poor, prolific, and ignorant people has sensibly increased. The effect of these changes on the aggregate ages of the population will be indicated by the following table:

Age.	1858.	1871.	1880	1890.
	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>
5 years.....	6.9	9.1	11.7	9.35
5 to 10 years.....	6.95	7.4	8.9	8.07
10 to 20 years.....	20.42	18.2	17.3	19.89
20 to 30 years.....	25.05	25.5	22.4	23.49
30 to 40 years.....	15.89	16.7	17.7	15.88
40 to 60 years.....	18.59	17	16.8	18.22
60 to 80 years.....	5.87	5.8	5	4.8
Above 80 years.....	0.33	0.3	0.2	0.28

The total death rate has declined from 22.15 per 1,000 in 1871-72 to 18.5 in 1891 and 18.3 in 1893. But the most striking illustration of the effect of the improved drainage on the health of the people of Frankfort is found in the statistics of death from typhoid fever. In 1865, the number of deaths from typhoid per 100,000 inhabitants was 80.2; in 1874, this rate had risen to 112; since that time it has steadily declined as the sewers and water supply have been extended, until the typhoid death rate for 1891 was 6 per 100,000 people; that for 1892, 8; and for 1893, only 4.6. These statistics and their relation to the sewer system and water supply are graphically shown in the following table, which has been specially prepared as an exhibit with this report, and gives the mortality from typhoid fever for each year since 1851, and the percentage of houses completely drained and joined to the sewers and hydrant water.

*Number of deaths from typhoid fever per 100,000 inhabitants, and the percentage of houses joined to the sewers and water supply in Frankfort during the years 1851-1893, both inclusive.*

Year.	Number of deaths from typhoid fever per 100,000.	Percent- age of houses joined to the sew- ers.	Percent- age of houses joined to the water supply.	Year.	Number of deaths from typhoid fever per 100,000.	Percent- age of houses joined to the sew- ers.	Percent- age of houses joined to the water supply.
1851.....	72	.....	.....	1873.....	64	18	3
1852.....	98	.....	.....	1874.....	102	38	33
1853.....	88	.....	.....	1875.....	42	43	52
1854.....	66	.....	.....	1876.....	33	46	57
1855.....	68	.....	.....	1877.....	12	52	62
1856.....	84	.....	.....	1878.....	12	56	68
1857.....	99	.....	.....	1879.....	21	61	72
1858.....	63	.....	.....	1880.....	19	65	75
1859.....	120	.....	.....	1881.....	12	68	78
1860.....	79	.....	.....	1882.....	15	72	80
1861.....	65	.....	.....	1883.....	18	73	81
1862.....	47	.....	.....	1884.....	12	76	83
1863.....	23	.....	.....	1885.....	13	77	84
1864.....	30	.....	.....	1886.....	11	79	87
1865.....	79	.....	.....	1887.....	6	80	88
1866.....	68	.....	.....	1888.....	8	84	90
1867.....	43	1	.....	1889.....	8	87	93
1868.....	72	2	.....	1890.....	7	92	96
1869.....	43	3	.....	1891.....	5	93	97
1870.....	58	5	.....	1892.....	7	94	99
1871.....	58	9	.....	1893.....	4	96	98
1872.....	61	15	1½				

## NEARLY PERFECT SEWERAGE.

In the construction and maintenance of its sewer system, Frankfort has enjoyed the advantage of the continuous service of Mr. W. H. Lindley, one of the foremost sanitary engineers of Europe, under whose father the system was originally designed and partially built, and who thus inherited a charge which he has since fulfilled with such conspicuous ability and zeal that his

skill has been called into requisition by Warsaw, Elberfield, Hanau, and other cities, which, upon careful examination, have found the sewer system of Frankfort a model worthy of adoption. In answer to the question what changes he would make if he had the sewers of Frankfort to build over again, with free hands as to money and means, and the option to adopt any modification which has been suggested by experience, Mr. Lindley, to whom this report is indebted for the table and most of the facts and statistics therein embodied, says :

If the Frankfort sewers had to be built over again, I should not suggest any radical changes. Some of the intercepting sewers, which, for want of favorable street lines at the time of their execution, had to be carried along less suitable lines, could now be better fitted to the lie of the land. All the principles embodied would be still more strictly adhered to, and the stringent rules as to the first-class quality of materials and workmanship would, perhaps, be still more strictly enforced, as this has most certainly, during the last ten years, worked a very great improvement in the materials manufactured for the work, especially the bricks and stoneware pipes, inverts and junction blocks. The inverts of the branch sewers, where they join the main sewers, would be raised higher above the main invert than was done at the beginning of the work. The main sewer of the lower system on the right bank of the river might be laid somewhat deeper, although it is at present laid at the depth of 15 to 25 feet and at a flat gradient (1 in 2,000). Still more stress would be laid on the mechanical part of the sewage precipitation works than has been done, and for this purpose, the preliminary settling tank would be made larger and more efficient. However, it is difficult to say whether such changes would be real improvements, as experience might show that they entailed new and unfavorable conditions which do not at present exist, and which might outweigh the advantages that such changes were intended to accomplish.

FRANK H. MASON,  
*Consul-General.*

FRANKFORT, *October 27, 1894.*

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#### GLASGOW.

Glasgow is situated on the River Clyde, a tidal river, at a point about 25 miles from the Firth of Clyde. The population numbers 686,820; including suburban towns, which is necessary in discussing the question of sewerage disposal, it has approximately 800,000 people.

It has an area of 11,861 acres, and the city proper contains 140,296 occupied dwelling houses. There are 1,911 streets in the city, mostly well paved with stone, and having a total length of 289 miles. There is a sewer in each street, the size varying from 15 inches to 7½ feet in diameter, according to the requirements of the locality and its proximity to the outfall. The sewers are ventilated by manholes and open, iron gratings in the center of the streets. The sewers are the ordinary brick and pipe sewers; there is no separate system for rain water.

Long anterior to the year 1855, Glasgow was a well-sewered city. The privy system existed in all the older parts of the town. As the city

extended, flush water-closets were constructed in all the new houses. Now, the privy system is in process of abolition by the substitution of flush water-closets even in the buildings in the old districts of the city. The whole sewage of the city flows by gravitation into the Clyde.

#### COST.

The cost of constructing sewers is assessed upon the proprietors of property fronting the streets wherein the sewers are constructed, in proportion to the actual frontage of the properties for the actual cost of the sewers up to 3 feet in diameter. When the diameter exceeds 3 feet the proprietor pays for the 3 feet of sewer, and the extra cost is paid by the city out of the general sewer fund.

#### HOUSE DRAINAGE.

Great attention is paid to the testing of drains connecting the houses with the public sewers and with the soil pipes. In illustration of this, it may be stated that a regular staff of men, with fourteen testing machines, are employed at this work. During the last year, 3,971 tests were made in sewers or drains connected with occupied dwellings, and 253 for newly built dwelling houses. No building can be occupied without such a test and a certificate from the sanitary department.

#### DISPOSAL OF SEWAGE.

For many years, the question as to what is the best means of disposing of the sewage of the city has been agitated. The Clyde has long been contaminated with filth and noxious odors, which are a nuisance to the city. A few months ago, new works at Dalmarnock, in the eastern part of the city, were opened for the purification of a portion of the sewage of the north side of the river. The system adopted is known as the "precipitation process." The precipitants used are lime and sulphate of alumina. The works were designed by Mr. E. V. Alsing, an engineer of reputation, and, when in full operation, will deal with sewage from 3,465 acres, estimated at 17,500,000 gallons daily. Under present circumstances 70,000,000 gallons are pumped daily. The works already completed at Dalmarnock cover an area of 30 acres, the cost for land being £37,801 and for buildings and machinery £70,000, a total of £107,801 (\$524,612.93). The estimated yearly cost for dealing with the sewage, per 10,000,000 gallons, at present flowing into the yards, including salaries, interest, and sinking fund of  $3\frac{1}{2}$  per cent is £7,946 (\$38,669.20), and is met by an assessment upon the whole city of  $1\frac{1}{2}$ d. per £1 (3 cents per \$4.86), payable one-half by the owner and one-half by the tenant.

Following I give the actual cost of running the works for three months ending July 31, 1894, the total quantity of city sewage dealt with being 458,990,000 gallons.

No. 173—5.





The new system of disposal of sewage, so far as constructed and worked, is entirely satisfactory to the citizens of Glasgow, and, when completed, the River Clyde may be as free and lucid a stream as it was some fifty years ago.

ALLEN B. MORSE,  
*Consul.*

GLASGOW, *September 25, 1894.*

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#### HAMBURG.

Previous to the "forties," Hamburg possessed no systematic sewerage. After the great fire of 1842, when the building up of those parts of the city which had been destroyed by the conflagration was begun, it was decided to furnish them with a system of subterranean sewers. The system chosen was the ordinary one of flushing with water, and it has been adhered to up to the present day. The work was completed in 1875.

The sewers serve as conduits for rain and all waste water, including house drainage, and are canals built of brick and portland cement, the cross sections of which are either circular, oval, or elliptical. Even the narrowest of these canals are accessible, the smallest size permitting a man to crawl through on his hands and knees. The large main sewers are navigable with flat-bottomed boats.

About 35 gallons per 24 hours per capita are calculated for waste water, it being assumed that half of this runs off in nine hours. For the rain water, it is figured that the rainfall amounts to one inch in twenty-four hours, two-thirds of which runs off during the same period (nine hours.) The water from very heavy rainfalls, which seldom occur, is carried off through emergency outlets, which must have a capacity for over one inch per hour, it being, however, assumed in this case that only half of the water from such a shower gets into the sewers, the other half evaporating or being absorbed.

Upon these bases, the cross sections have been constructed, the calculations, as a general thing, having been made according to Eytelwein's formula.

Air shafts of about one foot in diameter, at distances of 160 to 180 feet, serve for ventilating purposes. Besides these, the gutter pipes of the houses act as very good ventilators, carrying the canal gases above the roofs. At about every 500 to 560 feet there are, instead of the air shafts, square shafts about  $3\frac{1}{2}$  feet wide, to permit the sewer employees to enter the sewer for cleaning and other purposes.

The ground property is connected with the sewers by earthenware pipes, a little over a foot in diameter, and laid by the city. Under the sidewalk, and from there to the houses, the property owners must, under the supervision of the authorities, make their own connections. All sinks, water-closets, etc., discharging into the sewers, must be supplied with at least one good water shut off. Water-closets generally have two.

In case of exceptionally high water (spring tide) in the Elbe, the mouths of the sewers are automatically closed by iron flood gates in order to protect the houses in the lower parts of the city. During such a period, the sewers act as a reservoir, and when, through heavy rainfalls, this high water continues for any length of time, the contents of the sewers in the lower districts are discharged through the emergency outlets into the Aester, a tributary of the Elbe.

The flushing and cleansing of the sewers is effected by the sudden opening of locks in the sewers of the higher city districts. Wherever one sewer joins another, there is an appliance for flushing.

#### COST

Up to the close of 1891, the following meter lengths of sewers were constructed: Class A, 3,200; Class B, 2,540; Class C, 5,803; Class D, 2,176; Class I, 4,284; Class II, 3,682; Class III, 7,030; Class IV, 22,459; Class V, 92,647; Class VI, 177,622; a total of 321,443 meters, or 42.87 geographical miles for the sum of \$5,500,000. The pumping stations caused an expense of more than \$100,000.

For the last three years, the average annual expense of operating and keeping in repair the sewers of Hamburg has been \$41,230.

#### HOUSE DRAINAGE.

All the sewers discharge into the River Elbe. There are 23,310 houses connected with the river.

#### LABOR.

About one sewer guard to every 4 or 5 miles of sewer is necessary. There are forty-one sewer guards, whose wages are from \$340 to \$450 per annum, and thirty laborers who earn from 78 to 86 cents per day.

#### DEODORIZERS.

Deodorizers are not used, as they are not found to be necessary. In fact, the vice-consul, who had occasion about a year ago to make a trip through about 2 miles of one of the main sewers, informs me that there is comparatively very little odor in them; that the water is, on the whole, fairly clean; and that the ventilation is as nearly perfect as possible; this, too, notwithstanding the fact that, at some points, the sewer is 80 feet below the surface of the street.

It is an interesting fact and worthy of note that during the cholera epidemic in Hamburg in 1892, only two of the sewer employees were stricken with the disease.

W. HENRY ROBERTSON,

*Consul.*

HAMBURG, *October 1, 1894.*

## LEEDS.

The Leeds system of sewerage has been in operation about forty years. It was constructed when the city was much smaller than now, and, hence, to some extent may be considered rather obsolete. The corporation intend very soon to make great changes and additions to it. With this in view, a committee of experts has been visiting a number of cities to gather information in regard to the way sewage is managed and disposed of. I have been hoping to get a copy of their report, and hence have delayed making my report to the Department, but as I can not get any definite information as to exactly when their conclusions will be published, I have concluded to send on a report as to the workings of the system now, and very briefly refer to the proposed changes under consideration by the authorities.

## DISPOSAL OF SEWAGE.

Leeds is situated on both sides of the River Aire, a small stream that drains a large section of the West Riding of Yorkshire, in which are a number of manufacturing villages, towns and cities, all discharging their sewage and refuse, dyestuffs, etc., into the river. Leeds formerly did the same thing, but now the sewage is collected in one large main, having at its mouth large tanks or vats, six in number, into which the sewage is pumped, having been mixed with lime water, at the rate of three-fourths of a ton of unslacked lime to 1,000,000 gallons of sewage. The sewage, after being so mixed with the lime water, flows slowly along from tank to tank, until it reaches No. 6. The flow is very slow through these tanks, but it is a constant flow—never a perfect rest, which would be much better. But this, with the present capacity of the tanks, is impossible, as there is an average flow of 12,000,000 gallons of sewage every twenty-four hours, and only a tank capacity of 3,000,000 gallons. Thus, as only one-fourth of the daily sewage can be contained in the tanks at one time, the sewage can only have about six hours allowance in the tanks for the settling of the solid matter held in solution. During the night, when the flow is smallest, the tanks are of sufficient capacity, but when the flow is at its greatest, about noon, they are entirely too small. But even with the small time allowance, the quantity of solids that fall to the bottom of the tanks is something enormous, and the water passing out of the last tank is almost clear in color and is then permitted to flow into the river. The tanks are cleaned out as required, Nos. 1 and 2, say, three times a week; Nos. 3 and 4, twice a week; and Nos. 5 and 6, once a week. The sewage is cut off from the tank to be cleaned by a simple system of water gates and the bottom pumped dry of the sludge, which is raised up, say 20 feet, into a large tank, from whence it flows through a slough by gravitation into one of a large number of drying vats, which are filled in succession. When they are full, the sludge is left to dry out by evaporation and drainage into the bottom and sides of the vats. After two or three months,

according to the weather, it has become dry enough to be dug out with spades and shovels, and it is carted to a convenient place, where it is piled up, and after a short time it is given away to anyone who will take it. So far the farmers near by have valued it enough to carry it off to use on their fields. At one time, great masses of it accumulated, and the authorities tried drying it by fire in long iron rollers and at an expense of 4s. per ton, and then offered it to the farmers at 2s. 6d. per ton. Although they could cart three times as much of the dried product as of the moist, the farmers refused to take it, preferring it free as now. Some cities, I am told, have great difficulty in getting the sludge taken, and have, in some cases, to remove it by rail to a distance and empty into old quarries and waste places. The sludge amounts to about 500 tons per week at the Leeds sewerage works. It may be said that the solid matter separated from the sewage is of very little value as a fertilizer, and is given away to anyone who will take it.

#### SEWERAGE SYSTEM.

The Leeds sewerage system is that known as the combined system—that is, there is only one general system of sewerage pipes all through the city for sewerage proper and for storm or rain water.

Some cities have one general system of sewerage pipes to carry off the rain or storm water and the sewage proper. Others have a double set of pipes, the storm water not being allowed to enter the pipes for the sewage proper, and the latter are quite small, only having the comparatively small flow of sewage to pass through them.

As to which is the better plan, there is great difference of opinion by experts, one side contending, among other things, that with the sewage proper being kept separated from the storm water, the volume to be handled and treated at the works would be small enough to be more thoroughly manipulated and the solids more completely separated from the fluids; the liquid could finally be filtered, and what passed through the filters, being nearly pure water, could flow into the river, carrying no pollution. The advocates of a single system claim, on the other hand, that without the storm water to flush the sewer pipes, they would never be properly cleaned out, etc. The Leeds system combines the two, and, I think, in a great measure, has the good qualities and advantages of each.

The ordinary rain water is received in the sewers that carry away the sewage proper from the houses, thus frequently flushing them and sweeping out all filthy accumulations that may have settled in the bottoms of the mains. But there are supplemental mains laid at proper places, at junctions of a number of smaller sewer pipes discharging into a large main, and by a most ingenious, but simple, arrangement the excessive flow of water, when there is a great fall of rain, is received into another or extra main only used for this purpose, and thence is allowed to be discharged at frequent intervals directly into the river, without polluting it, as this flow would be only storm water from a big rain, uncontaminated with sewage. I have examined the

plates and plans of the city sewers in which this matter is fully shown and explained—but as I could not make clear the manner in which this result is accomplished without plates and diagrams and a long explanation, I merely refer to it as a fact fully established by actual use in Leeds to-day.

The garbage and solid refuse matter of the city, together with the ashes from the countless fireplaces in the city (the old-fashioned open fireplace being universally used in all houses by rich and poor), are all carted away at night by the city to the destructors, into whose furnaces everything is poured and there consumed, only clean, pure ashes being left to be used in filling up deep places, etc.

#### PROPOSED SYSTEM.

Leeds has a population of 380,000, about 80,000 houses connected with the sewers, and an abundant water supply. There are now in contemplation one of two plans as an improvement on the present sewerage system, namely, either to buy about 400 acres of land near the present terminus of the great leading main, and use the sewage in irrigating the crops to be raised upon it, in which case the pumping works will still be used; or, by a long aqueduct, carrying all the sewage by gravitation far enough down the valley seaward, until cheap, suitable land is found, when, say, 4,000 acres will be purchased and as much used as needed to receive all the flow of sewage in irrigation of hay and such other crops as may be desired. It is estimated that this aqueduct would be 14 miles in length before all the required conditions of cheap land and a sufficient fall toward sea level to carry by gravitation the whole of the sewerage to be used in irrigation is reached. This plan will require greater initial outlay, but, when once completed, it will be sufficient for all future growth of the city. Which plan will be adopted, I am unable to say.

NORFLEET HARRIS,

*Consul.*

LEEDS, *October 31, 1894.*

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#### LIVERPOOL.

The sewerage system of Liverpool is an ordinary water-carriage system, into which both sewage proper and storm water are conveyed away together. There are, however, several storm overflows emptying at different points, either into the River Mersey or into the docks, and these come into operation only during very heavy rains when the sewers are gorged.

#### COST.

The total approximate cost of constructing the sewers has been \$10,000,000. The total length of main sewers is 258½ miles of brick sewers, ranging in size from 8 feet 4 inches diameter to 3 feet by 1 foot 10 inches, and 268 miles of pipe sewers varying in size from 18 down to 9 inches.

The annual cost of maintaining, including necessary repairs and flushing operations on the whole of the system was, during 1893, \$64,305.

#### HOUSE DRAINAGE.

There are approximately 107,000 houses drained into the corporation sewers. The method of drainage varies, but in all the later premises erected the drains are constructed so as not to pass under the houses, in accordance with the drainage by-laws and regulations.

#### LABOR.

The workmen employed in the sewerage department average about 150, viz, 25 bricklayers and 125 ordinary laborers. In addition to these, there is a flushing gang numbering about 45 men, whose duty it is to flush the drains of all private premises twice per annum. The following schedule will give the average rate of per diem wages paid to the workmen: Bricklayers, \$1.50; ordinary laborers, 85 cents to \$1.21; public and private flushing gangs, 73 cents to \$1.09. When working underground, 12 cents extra per day each is allowed.

#### DISPOSAL OF SEWAGE.

The sewage of the city is discharged, without any treatment, into the estuary of the Mersey through nine outfall sewers. Owing to the very large mass of water into which they are emptied, no inconvenience is felt.

#### DEODORIZERS.

It is not found necessary to adopt any general system of deodorizing the sewage. A very efficient system of ventilation, by means of surface ventilating gratings, and also by some nine hundred ventilating shafts, is in use, and, consequently, there is a constant draught through the sewers. In a few cases, annoyance has been caused by certain surface ventilators, and some of these have been fitted with special disinfecting ventilators, containing carbolic acid.

#### DEATH RATE.

The sewers of Liverpool, up to about 1879, were in rather an inefficient state. The corporation, however, about that time, commenced to take active measures to improve the existing state of things. Information on this point will be found in the report by Clement Dunscombe, M. A. M. Inst. C. E., late city engineer of Liverpool, in which the cost of this work, up to the year 1889, is set forth. Coextensive with the improved state of things, the death rate has shown a sensible diminution up to the date of the report, and, no doubt, much of this decrease is due to the sewerage operations as well as to the demolition of unhealthful property and the extensive construction of impervious pavements throughout the city.

JAMES E. NEAL,  
*Consul.*

LIVERPOOL, *November 1, 1894.*

## REPORT OF ENGINEER DUNSCOMBE.\*

[Extracts.]

## VENTILATION OF SEWERS.

Prior to 1871 there were no ventilators fixed upon the main sewers in the city. At that date, 1,046 Archimedean screw ventilators, 6 inches in diameter, were connected with the branch sewers from courts, the 6-inch pipe being attached to the side of one of the court-houses wherever permission could be obtained. Of this number, there are at the present time 976 remaining, which includes a few shaft ventilators added since 1871, mainly in confined situations where open grid ventilation was found to be objectionable, the demolition of insanitary court-houses and of property for railway and other improvements having reduced the number that were originally fixed.†

Ventilating grids, or ventilating manhole covers, as the case may be, the clear opening in each being not less than 63 square inches, have been fixed along the main sewers at a distance apart of 80 yards approximately.

Prior to 1876, detail records do not seem to have been kept in the engineer's department of the rate of progress of this work, but it appears that up to that year 28 miles of main sewers had been ventilated.

With the exception of those sewers into which hot water is discharged or steam injected, and which are few in number, the ventilation of the whole of the Liverpool main sewers was completed in 1882. Length of sewers ventilated to the year 1882, 177 miles; new sewers constructed and old sewers reconstructed from 1876 to 1885, inclusive, 72 miles; total mileage of brick and pipe sewers ventilated to year 1885, 249 miles.

All new sewers are now ventilated in a similar manner, as their construction proceeds.

The total cost of ventilation has been £12,000, or 7d. per yard run of sewer.

## RECONSTRUCTION AND ALTERATION OF GULLIES.

The records of the progress of this work up to 1880 appear to be incomplete. Since that year all defective gullies have been altered, improved, or reconstructed \* \* \* and all new gullies have been built in accordance with [a form which] combines the essentials requisite to reduce to a minimum the quantity of detritus entering the sewers.

## CLEANSING OF SEWERS.

No systematic cleansing of the sewers appears to have obtained prior to 1871, but from that year systematic cleansing of the main sewers in the lower districts of the city and tide-locked sewers has been carried out, in addition to the cleansing which takes place previous to the execution of repairs.

The necessity for cleansing the sewers which have been repaired and the gullies emptying into the same rebuilt has been in a great measure obviated, owing to (1) the improved construction of the gullies, by which less detritus enters the sewers, the extension of impervious pavements of slow-wearing material, and the reduction in the area of macadamized roads; (2) the generally self-cleansing condition of the sewers as repaired, and their systematic flushing.

## REPAIRS.

Preparatory to executing any repairs in a sewer, it is thoroughly cleansed, and then inspected to ascertain what repairs are necessary, in order to put it into perfect condition and make it, in the future, as far as possible, self-cleansing.

The repairs executed to the sewers are: (1) Repairs dependent upon the defective junction of branch sewers with main sewers, either in plan or section; (2) repairs required consequent upon the natural decay or wearing away of the materials forming the sewer.

\* A reprint from CONSULAR REPORTS No. 117 (June, 1890), pp. 287-297.

† As regards the Archimedean screw ventilators, Drs. Parkes and Sanderson state, in their report, as their opinion that, notwithstanding the mechanical efficiency of the Archimedean screw ventilators, they exercise no practical influence in preventing the escape of sewer air into the streets and houses.



(1) *Defective junction of branch sewers with main sewers.*—Where a branch sewer meets a main brick sewer at the same invert level, this has been altered, whenever the gradient would admit of it, by raising the invert level so that it outlets into the main at its proper relative level and running the gradient out to meet the ordinary gradient of the branch sewer—the work being executed in portland-cement concrete. Where a branch meets the main sewer at right angles, the junction is altered to a curve of moderate radius.

(2) *Sewers decayed and worn.*—In the case of repairs consequent upon the natural decay or wearing away of the materials forming the sewer, the mode of procedure is as follows:

(a) *Pointing.*—After cleansing and examination, the class of repairs required is decided upon. In some cases, the raking out of the joints of the brickwork, washing it, and repointing in portland-cement mortar, mixed in the proportions of one of cement to one of sand, will meet the case.

(b) *Pointing and reinverting.*—In some instances the invert of the sewer is found to be worn away, or constructed so unevenly as to assist the formation of deposit. In this case, in addition to the pointing already described, the invert of the sewer is improved in cross section and gradient, the mode of procedure being as follows: The sewer being cleansed, the joints are raked out, as before stated, and the sewer is reinverted with portland-cement concrete averaging two parts of river gravel to one part of cement, the surface being finished in the proportion of one part of cement to one part of gravel. This mode of treatment constitutes the work executed in the majority of the old sewers dealt with in the parish of Liverpool.

Owing to the large dimensions of the main sewers, the whole of the operations in connection with their repair are conducted without in any way disturbing the pavements. The work is executed between manhole and manhole, the sewage in the sewer operated upon being dammed back at the point under repair and provision made for the discharge of the sewage through pipes or open troughs suspended from the portion of sewer undergoing repairs. After the lapse of about four days from completion of the respective repairs the sewage is again allowed to flow through the sewer.

#### RECONSTRUCTION.

Since 1879, 14 miles of main sewers, mostly of large capacity, have been reconstructed at a cost of £51,739.

#### NEW BRICK SEWERS.

All new brick sewers are generally constructed \* \* \* with bricks molded to the respective *radii*, and, in certain cases, the invert is lined with the best radiating blue bricks.

The following table shows the areas dealt with from 1873 to 1885, inclusive:

Year.	Area.		Sewers repaired.
	<i>Acres.</i>	<i>Miles.</i>	
1873-1875.....	206	13	
1876-1879.....	781	28	
1880-1885.....	657	37½	

The results from these repairs have been most satisfactory, both on sanitary and economical grounds.

(1) Freedom from deposits in the sewers and a quicker discharge of the sewage to the respective outfalls, and consequent lessened impurity of the sewer air, which can thus be more readily rendered perfectly innocuous by dilution with fresh air through the open gratings fixed over the sewers. When the main causes of the impurity of the sewer air, viz, deposits in the sewers, are removed, open grid ventilation, as adopted in Liverpool, by which means the sewer air is diluted, is an effective system which can be carried out at a moderate cost.

(2) On economical grounds, the repairs have been satisfactory, by diminished cleansing of the sewers repaired, and preventing the necessity of reconstructing the sewers so dealt with at some future time at considerable cost.

When large volumes of hot water discharge into a sewer and can not be prevented, and where wastes from chemical or other works empty into it, special means of ventilation other than by open grids is necessary, and in certain cases it may be preferable to construct a special drain for these discharges.

#### HOUSE-DRAINAGE REGULATIONS.

In 1882, the engineer prepared draft by-laws with respect to the drainage of buildings. They were duly approved by the health committee, and were subsequently confirmed by the local government board in November, 1883. From this date all new buildings erected in the city have been drained in conformity with these regulations, which are found to work satisfactorily.

Except in the center of the parish of Liverpool, the houses are drained on what may be termed the "back-drainage" system, the drains discharging into the passage sewer at the rear of the premises, avoiding the necessity of any of them passing under the buildings, and admitting of the houses being drained on the best sanitary principals, and affording easy means for their periodical inspection.

The estimated cost of executing the drainage of a cottage house in Liverpool under these regulations, inclusive of closet pan and siphon, siphon trap and waste from sink, also bath waste, is, in the case of a cottage house with an external water-closet, £3 10s., and, with an internal water-closet in addition, £4 5s.

With such additional appliances and fittings as may be requisite, the system of drainage adopted for the cottage house is equally applicable in degree to the largest houses in the city. The highest sanitary standard of house drainage is extremely simple in arrangement and need not necessarily be expensive, but, on the other hand, can in ordinary cases be carried out at such a moderate expenditure as should encourage owners of house property to reconstruct the drainage of the same where it is not in accordance with the most modern practice as defined by these drainage regulations.

#### FLUSHING OF SEWERS AND PRIVATE DRAINS.

All main sewers that are not self-cleansing are periodically flushed by large movable tanks placed over a manhole on the sewer. These tanks contain 1,800 gallons of water, and discharge their contents into the sewer through a valve at the bottom of the tank in twenty-eight seconds. The cost of this work is about £1,200 per annum. All passage sewers are flushed four times annually by special gangs, either from chambers at the head of each sewer or by hose connected with hydrants fixed in convenient positions, and, in addition, they are indirectly flushed twice annually by the private drains flushing gang. The cost of this work is about £1,100 per annum.

In December, 1880, on the recommendation of the engineer, the health committee resolved to flush all private drains twice annually, free of cost to the occupiers, and oftener on payment of a small fee, regulated according to the ratable value of the premises, and this work has since been regularly carried out. It is so arranged that a flushing gang visits each house in the city once every six months. The staff for this work comprises one flushing inspector, one foreman, and sixteen gangs of three men each.

The drains, water-closets, and soil pipes within the curtilage of all premises are flushed by hose attached to hydrants fixed at convenient distances in the passages or adjacent streets. The occupiers of the houses willingly cooperate and afford every facility for executing this important sanitary work, and, although 107,000 houses, exclusive of warehouses, stores, offices, etc., are visited twice annually, few complaints reach the department relative to the manner in which any of the operations are conducted.

The cost of this work is £5,000 per annum, or under 6d. per house for each flushing. In all cases the water is supplied free of cost by the water committee of the corporation.

## INSPECTION OF MAIN SEWERS BY SPECIAL GANGS.

This work has only been carried out systematically since October, 1885. Previous to that date, however, all sewers were examined wherever connections were made with them for the drainage of property, also prior to cleansing or executing repairs or other work, and reports made as to their condition either by the sewer inspectors or workmen engaged, so that practically the inspectors and workmen were conversant generally with the condition of the sewers. The periodical inspection of all the sewers is, however, preferable.

So far as the inspection has gone, which, in the future, will be a continuous one, it has been ascertained that the remaining sewers in Liverpool will in every case require to be dealt with as already described.

## EXPENDITURE.

From the table annexed it will be seen that the majority of the repairs up to the present date have been carried out within the parish. The engineer estimates that the corporation has expended, from 1873 to date, the following sums in repairs and cleansing consequent on repairs:

Year.	Parish of Liverpool.	Township of Kirkdale.	Township of Everton.	Township of West Derby.	Township of Toxteth Park.
1873-1879.....	£19,520	.....	£600	£200	£1,270
1880-1885.....	59,486	£1,955	3,795	4,269	3,650
Total.....	79,006	1,955	4,395	4,469	4,920

During this period,  $78\frac{1}{4}$  miles of main sewers have been repaired at a total cost of £94,745. Of this mileage,  $62\frac{3}{4}$  miles are in the parish.

## LYONS.

The city of Lyons is divided by the rivers Rhône and Saône into three parts. The part of the city west of the Saône is the most ancient, and is situated on steep hills rising abruptly from the Saône to a height of several hundred feet. The center, or business part of the city, is located on the point of land between the two rivers. For a distance of nearly 2 miles from the point of junction of the river, the land is quite flat, becoming hilly in the northern portion of the city. On the east side of the Rhône, is the more modern, and the residence portion of Lyons. Here, the land is flat, having been largely reclaimed from swamps, by the building of magnificent quays, during the Third Empire.

## SEWERAGE SYSTEM.

The sewers of Lyons are divided into three systems, entirely distinct—the system of the center, between the Rhône and the Saône, which includes three collecting sewers; the system of the right bank of the Saône, which includes one collecting sewer; and the system of the left bank of the Rhône, which includes one collecting sewer. The collecting sewers have a width of from 2.25 to 3 meters (7.38 to 9.84 feet), and a height of from 2.25 to 3.35 meters (7.38 to 10.17 feet). These sewers are constructed of ordinary ma-

sonry, of rubble and hydraulic cement. They are coated on the interior with mortar of lime of a thickness of 0.02 meter (four-fifths of one inch), except the banquettes and headings, which are covered with portland cement of a thickness of 0.03 meter (1.1 inches).

The secondary sewers are of three different types, and are ovoid in shape. Their dimensions are as follows:

Type.	Height.		Width.	
	Meters.	Feet.	Meters.	Feet.
Second .....	2.1	6.97	1.3	4.27
Third.....	2	6.56	1	3.28
Fourth.....	1.80	5.89	1	3.28

They are constructed with concrete masonry, composed of 150 kilograms (331 pounds) of hydraulic cement of lime to the cubic meter (35.316 cubic feet) of gravel of the Rhône, mixed with sand. The interior walls are coated with mortar of hydraulic cement of lime of the thickness of 0.02 meter (four-fifths of an inch) except the floor, which is coated with portland cement of the same thickness.

These types of sewers were invented by the public commission of sewers, and their construction has continued regularly since 1874. They receive the rain water from the streets; also the rain water and water from sinks, basins, etc., from houses, but not the matter discharged from closets, which is received by branch connections of glazed tile, of an interior diameter of from 0.25 to 0.30 meter (9.8 to 11.8 inches). The discharge from water-closets, privy vaults, etc., is not taken into the sewers of Lyons, but is disposed of as described hereinafter.

#### COST.

The net cost of collecting sewers of rubble varies from 80 to 120 francs (\$15.44 to \$23.16) per running meter (39.37 inches), according to the dimensions and the depth of the excavation. The net cost of sewers of the second, third, and fourth types, made of cement, and at a depth of 4 meters (13.12 feet) is as follows per meter (39.37 inches): Second type, 42 francs (\$8.11); third type, 36 francs (\$6.95); fourth type, 33 francs (\$6.37). These prices (net) include the excavation, constructing the sewer, refilling the trench, repairing the roadway, and making the manholes and the openings in the street for the surface water.

The length of the collecting sewers in Lyons is 18,943.45 meters (62,167 feet), and of secondary sewers of the different types, 110,435.47 meters (362,320 feet).

#### HOUSE DRAINAGE.

The drainage from houses into the sewers is by connections of tile, of an interior diameter of from 0.25 to 0.3 meter (9.8 to 11.8 inches), which leave the houses at a point 0.80 meter (31½ inches) below the walk and connect with the sewer at a point 0.30 meter (11.8 inches) above its bottom.

## LABOR.

There are fifty-six laborers, under three chiefs, in the sewer department. The chiefs receive 1,600 francs (\$309), and the ordinary laborers 1,420 francs (\$274) per year. The cleaning of the sewers costs 96,448 francs (\$18,614), which makes the cost per year of cleaning sewers 74½ centimes (14.38 cents) per meter (39.37 inches).

## DISPOSAL OF SEWAGE.

The water from the sewers is discharged into the Rhône, where the slope of the river is 0.001 per meter. The sand and gravel are extracted from the sewers through the openings in the streets and carted away. About 2,500 cubic meters (8,290 cubic feet) are annually taken from the sewers at a net cost of about 2.79 francs per cubic meter (53.8 cents per 35.316 cubic feet), but this expense is included in the cost of cleaning sewers, given before.

The cost of maintaining the masonry, walls, openings, etc., of the sewers is about 30,000 francs (\$5,790) per annum, about 24 centimes (4.6 cents) per meter.

The city of Lyons makes no profit from any matter taken from the sewers.

## DISINFECTANTS.

The disinfectant used is powdered chloride of lime, which is placed in receptacles in the walls of the sewers.

## DEATH RATE.

It is impossible to state precisely what effect the sewer system has had on the public health. During the first period of ten years after the adoption of the present system, the death rate had decreased 10 per cent.

From the information that I have been able to collect, the sewerage system of Lyons meets the public requirements, and is perfectly satisfactory.

## DISPOSAL OF SEWAGE.

It will be noticed that the sewer system of Lyons does not include and has nothing to do with the disposal of the discharge from water-closets, etc. All such matter is disposed of in another way. All houses are built with vaults, into which all matter from closets is discharged. These vaults are regularly cleaned by pumping engines, which are so constructed that the matter is drawn from the vaults into air-tight tanks, upon wheels. This is done by a company under contract with the city. The matter is carried to a station in the country, where the solid matter is separated from the liquid and made into fertilizers and sold. There is no odor or disagreeable result from the vaults, or the manner of cleaning them.

Under the above system, Lyons is, in my opinion, a healthful and clean city.

FRANK E. HYDE,  
*Consul.*

LYONS, *October 6, 1894.*

## MANCHESTER.

One of the most important public health questions of the day is how to dispose of the sewage of a large city. The system of treatment now generally adopted in this country is that of precipitation by alum and lime, the effluent being treated by filtration and the sludge dealt with by presses. This is the method in use by the authorities of the city and port of Manchester. Up to February, 1894, the whole of the domestic sewage, with the exception of that removed by the pail-closet system, found its way, by the street sewers, into the various rivers and streams which flow through the city. The plan adopted and in use since February last is an intercepting system, by which all old sewers at present entering the rivers are diverted to the outfall works, 5 miles below the city. In designing the present scheme, the cardinal object was to avoid pumping, if possible, and this has been accomplished, the whole drainage of the extended city eventually finding its way by gravitation to the outfall works at Davyhulme.

## SEWERAGE SYSTEM.

Manchester has a population of 522,000 and a daily water supply of 20 gallons per head. The calculations for the size of the sewers were based upon the requirements necessary for a population of 625,000 and a daily water supply of 25 gallons per head, together with a rainfall, varying in different parts of the district, from three-sixteenths of an inch up to half an inch in twenty-four hours. With regard to subsoil water, from gaugings taken by Mr. William T. Olive, resident engineer of the Manchester corporation, it has been ascertained that the amount entering the Manchester sewers per acre of sewer surface is at the rate of only 173,000 gallons a day, or 1.92 cubic feet per minute. The main intercepting sewers vary in size from 3 feet wide by 2 feet high to 14 feet by 10½ feet. All the sewers up to 5 feet diameter have been built in two rings of brickwork; from 5 feet to 10 feet diameter, in three rings; and the main outfall, which is 14 feet wide by 10½ feet high, in four rings. In the smaller sewers, blue bricks have been used for the inner ring, and common red brick for the outer ring. Both hydraulic lime and cement mortar have been used—whichever was considered most suited to the nature of the ground.

Special provision for storm water has been made by providing a storm overflow sewer, discharging into the Ship Canal at Mode Wheel, which is so constructed that nothing can flow through it until, with the addition of rainfall, the volume flowing down the main outfall sewer at its junction with the storm overflow sewer exceeds six times the normal flow of sewage from the whole area draining into the main outfall sewer.

## CONSTRUCTION DIFFICULTIES.

By far the larger part of the work has been done in tunnel. The strata have been, for the most part, sandstone rock, boulder, clay, sand, and ballast,

and a little running sand. The greatest difficulties to contend with have been presented by the old sewers, which, to a large extent, follow the same lines as the new, sometimes running about the same level, side by side, or crossing over, under, or through. In two instances, men have been drowned, owing to the bursting of these dangerous and often badly constructed old sewers, and many times the workings have been flooded thereby. Special ironwork had to be made, and storm overflow chambers built over the old sewers wherever tapped, so that only the right amount of sewage and storm water should enter the new sewers, and the rest should flow over a weir and down the disused portion of the old sewers to the rivers. Twice have old tunnels, from the rivers Irk and Medlock to adjoining mills, been cut through, at great expense and some danger. In one place, a disused canal branch, the existence of which was not known, was tapped, and the workings were flooded, the men narrowly escaping with their lives. At Erskine street, Stretford Road, there is a large junction chamber or bedmouth, where the combined flow of a 7 and a 9 foot sewer discharges into the main outfall sewer of elliptical section, 14 by 10½ feet. The length of this sewer to the storm overflow chamber is about 3,535 yards, or just over 2 miles, and it varies in depth from 37 to 45 feet below the surface of the ground. The storm overflow chamber measures 51½ feet long by 27 feet 2 inches wide. In passing under the Bridgewater Canal, the main outfall sewer had to be constructed in two cast-iron cylinders, each 8 feet 9 inches in diameter, owing to the lack of headroom and the stipulation that a depth of 9 feet, in place of 5½ feet, was to be provided. The work was done, half at a time, by means of cofferdams made of sand, and the canal had to be temporarily widened in order to provide for an uninterrupted traffic. From the storm overflow chamber to the tanks, a distance of 4,259 yards (2.42 miles), the main outfall sewer is diminished in size to 10 feet diameter, with a fall of 1 in 2,000. It averages 15 feet deep, and has been laid in open cutting and through fields.

#### TREATMENT OF SEWAGE.

Through the courtesy of Mr. T. W. Olive, resident engineer of the Manchester corporation, I inspected the outfall works at Davyhulme, where the "sewage proper"—which consists of the water supply changed by domestic and manufacturing use from a clean into a foul liquid—is received and "treated." After the sewage leaves the 10-foot outfall sewer, it flows through a screen, inclined at an angle of about 60° with the horizontal. Immediately behind the screen the precipitation agents—sulphate of alumina and milk of lime—are added, and thoroughly mixed with the sewage, by means of an agitator. The water then passes on in a channel and is admitted into any one of the eleven settling tanks, each 300 feet long by 100 feet wide, having an average depth of 6 feet, equal to a water area of about 7½ acres in the tanks, and holding a capacity of 12,375,000 gallons. After the addition of the chemicals, a flocculent precipitate is formed, a part of the

dissolved, slimy organic matter is coagulated, and in the settling tank these suspended matters slowly fall to the bottom. The clear liquor, or "effluent," is then run off, along a channel, to the filtration beds, where, after passing through the soil, it finds its way into the Ship Canal in a comparatively pure condition. The land owned by the corporation for filtration purposes, apart from that occupied by the tanks and buildings, is about 325 acres—112 acres at Davyhulme and 213 acres at Flixton, 2 miles distant. Only 30 acres are at present laid out in two beds. The beds are drained by 18-inch mains, socketed pipes with puddle joints, laid about 200 feet apart and parallel to the center bank. Into these pipes, 6-inch agricultural drain tiles, laid 30 feet apart, are connected. The precipitate, or sludge, remaining in the tanks, after the effluent or clarified sewage water has been drained off, is a thick liquid containing fully 90 per cent of water. While in this condition it is a most unmanageable material, and is not in a condition to tempt farmers or market gardeners to be at the expense of transporting it for manurial purposes; there is too much water. The plan formerly adopted was to run the sludge into shallow pits or on open ground, where the water slowly drained away or was evaporated by the sun and wind. When the sludge attained sufficient consistency to enable it to be worked with spades, it was carted away to be used as manure. This plan, however, was open to many objections. In wet weather the sludge could not be dried, and in hot weather it became an unbearable nuisance. At the corporation works at Davyhulme, the sludge, after the effluent has been run off, is raked into a channel, from which it is pumped up by a sludge ram into filter presses. The filter press is a machine designed to filter the liquid through coarse cloth or other filtering medium. Concave-shaped plates are covered with a coarse, canvas-like cloth; the liquid sludge is then forced at high pressure through a hole which runs through the several plates the whole length of the machine, the sludge being prevented from escaping by the close-fitting sides of the plates. The press is then tightened up by means of compressed air, and finally discharges the sludge in the form of comparatively dry cakes, containing only about 50 per cent of moisture, and weighing only about one-fifth of the original weight of the wet sludge entering the filter press. The sludge cakes, as discharged from the press, are in a convenient form for handling and transporting, and are practically without smell. They are utilized by farmers for manurial purposes. No revenue is derived therefrom.

#### COST.

The total ultimate cost of the Manchester sewage system will be \$3,406,550. The machinery in use (including an electric light plant) cost \$48,665. The length of the main sewers is about 2 miles. The number of houses drained is about 100,000. The sewage department employs about fifty men, at an average wage of 10 cents per hour.

The system in use by the Manchester corporation has so far proved efficient, but as it has only been in operation since February, 1894, there is



not sufficient data available to furnish reliable information as to its efficiency, economy, and hygienic effects.

#### DISPOSAL OF GARBAGE.

Although not coming under the head of "sewage proper," the manner in which the dry garbage, consisting of ash-pit and pail-closet refuse, street and market sweepings, and other refuse matter is disposed of by the Manchester corporation is so admirable that I deem it advisable to make a report thereon.

For the purpose of ridding Manchester of its dry refuse, the "Carrington moss estate" was purchased in 1886. The estate consisted of 600 acres of wild moss or bog land, 209 acres of cultivated moss land, and 9 acres of roads, etc., or a total of about 1,100 acres. The land was purchased from the trustees of Lord Stamford, and cost \$184,927, in addition to which a sum of \$155,728 was voted by the council of the city of Manchester for a light railway, roads, drainage, rolling stock, live stock, building, and other expenses.

Since the purchase of the estate, large quantities of night soil have been sent to Carrington, and nearly the whole of the wild moss has been drained, delved, manured, and cultivated, and heavy root and corn crops have been raised. The cleansing committee farm about 400 acres; the other portion of the estate is let to various tenants, among others being the park and cemeteries committee, who have a piece of land there as a nursery, upon which they grow shrubs for the Manchester parks. A number of market gardeners grow vegetables on a large scale for the Manchester markets. The cleansing committee's farm this year consisted of 141 acres of oats, 55 acres of potatoes, 126 acres of clover, 24 acres of carrots, and 23 acres of pasture land. There are only about 50 acres of raw moss left upon the estate. Nearly the whole of the raw moss has been rapidly transformed into rich agricultural land. During the twelve months ending July, 1894, produce was raised upon the corporation farm, which realized the following amounts: Hay, \$3,854.26; oats, \$4,379.85; straw, \$3,946.73; potatoes, \$4,019.72; and carrots, \$2,934.49, the latter crop selling for over \$146 per acre. All oats, corn, hay, and straw are utilized by the cleansing committee. They have nearly 500 horses working in the department, and these, of course, consume much more fodder than is grown on the Carrington estate.

The following quantities of refuse have been sent to Carrington annually during the years 1890, 1891, 1892, 1893, and 1894, viz, 52,549 tons; 56,002 tons; 67,102 tons; 53,231 tons; and 46,057 tons, respectively.

Had it not been for this means of disposing of the refuse from the city of Manchester during the last six or seven years, the cleansing committee would have experienced great difficulty in ridding the town quickly of so much offensive matter as has been above referred to.

It is interesting to know that, from a financial point of view, the citizens of Manchester are in possession of an estate which is worth considerably

more than the money which has been expended upon it. We find that in 1892, when the city surveyor made his quinquennial valuation of the property of the corporation, he valued the estate at Carrington at \$366,520; the amount expended by the cleansing committee upon the estate to the time referred to by the city surveyor amounted to \$314,638, thus showing considerable increased value on the price paid for its purchase. There are three locomotives upon the estate, and a large number of small trucks. The refuse is sent down the Ship Canal in barges to the committee's wharf at Carrington, where it is quickly loaded into the small trucks, which are lowered into the boat by a steam crane and then hoisted on to the light railway. There are between 10 and 12 miles of light railway on the estate, by means of which the committee are enabled to deliver the night soil, etc., expeditiously at any point. The most fastidious would be unable to notice anything of an offensive nature there; in fact, there is much less in this respect to find fault with than can be found on most farms.

#### ACKNOWLEDGMENTS.

I can not close this report without expressing my thanks to the following named gentlemen of the Manchester corporation, viz: William T. Olive, M. Inst. C. E., resident engineer under the Manchester corporation; R. D. Callison, indoor superintendent of the cleansing department; and Thomas L. Ellwood, chief clerk of the public health office, who have most kindly accompanied me through their respective sections and departments, and have, in every way, given me the benefit of their expert knowledge.

WILLIAM F. GRINNELL,

*Consul.*

MANCHESTER, *October 24, 1894.*

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#### MARSEILLES.

Sanitary conditions at Marseilles are exceedingly defective, the sewerage system—if indeed it may properly be termed a system—being of the most imperfect and primitive nature. This statement, however, applies only to the conditions now prevailing, and not to the work in process of construction or contemplated. An entirely new system has been begun, to which reference will be made herein, but of which no correct details are as yet obtainable.

Touching the system in actual operation, it may be said, in a general way, that, perhaps, no city in the world of equal population has been so grossly careless of health conditions. In most of the houses there is but one cistern, and this supplies both the kitchen tap and the water-closet, and the construction is of such a nature that whenever the valve of the water-closet is raised, the supply of drinking water is brought into direct communication with the pipe leading therefrom.

The census of 1886 showed that the city of Marseilles contained 32,653 houses. Of these, 5,000 were provided with *tinettes filtrantes* (filtering tubs); 4,000 with cesspools, and 10,000 with *tinettes sèches* (dry tubs), while 13,600 were destitute of any sanitary accommodation whatsoever. In the poorer quarters of the town, many houses are absolutely without the most primitive convenience, whilst in numerous small houses, the cabinets are practically valueless. Under these circumstances, it is not surprising that the mortality at Marseilles for the past ten years should stand at the high average of 32 per 1,000. The significance of this will be observed by a comparison with the death rate, per 1,000, of ten other cities: Toulon, 31; Havre, 29; Brest, 28; St. Petersburg, 28; Bombay, 28; Lille, 25; Berlin, 24; Lyons, 22; Brussels, 21; London, 19.

It is worthy of note that very recently, Marseilles has suffered from several epidemics of cholera, which have caused the deaths of 5,294 persons.

The systems of sewage collection at present in use, which have been employed for many years back, are of the crudest and most imperfect nature. They may be summarized as follows: (1) French (*fosse fixe*); (2) permeable cesspools (*éponge*); (3) closed tubs (*tinettes étanches*); (4) filtering tubs (*tinettes filtrantes*), which allow the liquid matter to filter through to the drain, street gutter, or permeable cesspool; (5) cesspools placed under the pavement, allowing the liquid matter to go to the drain; (6) Mourras' drain; and (7) throwing of all sewage into the street gutters. With respect to the last of the systems, it should be mentioned that the law forbids the practice, but, notwithstanding, it exists in the quarters of the city occupied by the poor.

It seems unnecessary to give more than a mere mention of the imperfect means at present employed, especially as they are soon to be superseded by an extensive and modern system. The old drains were placed in but a small portion of the town, were made upon no general plan, and, though conveying a considerable portion of the town sewage, were constructed upon bad principles, both as to the gradient of the drains and the facilities for cleaning. A large portion of the system consists of lengths of sewer pipes, which come to a dead end without outlet.

#### PROPOSED SYSTEM.

As before stated, an entirely new system of a highly perfected type is now being constructed, the time contract for which terminates in two years. Under this system, the city is divided into districts, according to the configuration of the soil. Under every street, a drain is to be constructed which will receive all sewage from the adjoining houses. These drains will join a secondary collecting sewer, of which there is one in each of the districts referred to, at the lowest point of ground. These, in turn, will flow into the main collecting sewer, the slope and section of the secondary sewers being arranged in such a way that all sewage will be conveyed through them as speedily as possible to the main drain. At the highest points of these

drains, reservoirs will be established for the purpose of thoroughly flushing the entire system. The water supply of Marseilles is ample and can well stand this demand, but the possibility of its being insufficient has been provided for by the erection of a powerful pumping station to raise the requisite amount of water from the sea.

The main collecting sewer starts from the suburb of Arenc, at the western extremity of the city, where it receives, by means of collecting drains, the sewage from surrounding districts. It then traverses the town throughout its entire length and goes on to the village of Mazargues, where it makes an angle and then proceeds in a straight line, to the sea, which it enters at the Bay of Courtion.

#### COST.

The contract for the new system, which has still two years to run, was signed for a total sum of 33,500,000 francs (\$6,465,500). It is naturally impossible to obtain at this time reliable figures as to the probable cost of maintenance or details as to administrative features, the period of completion of the sanitary works being still remote. All sewage will be conveyed straight to the sea without any attempt being made to separate solid from liquid matter, or to utilize either for any purpose whatever. The work of construction is being actively pushed forward, and it is anticipated that the system will be completed within the time provided for in the contract.

CLAUDE M. THOMAS,

*Consul.*

MARSEILLES, *September 15, 1894.*

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#### MUNICH.

The sewerage system of Munich was begun in 1880, and is to be completed in 1897. There is no separate system for storm water and house drainage. The work is not yet complete, and information at this date is obtained with much difficulty.

At the close of the year 1893, there were in Munich 111,855 meters (366,980 feet) of brick sewers, 23,503 meters (77,109 feet) of street sewer pipe, and 3,323 meters (10,902 feet) of house connecting pipe, the total cost of construction being 11,277,173.17 marks (\$2,683,967.21).

The main sewers are of brick, with a base of clinker stone (double burnt brick), are 0.12 meter (4.7 inches) thick, and are surrounded by a layer of concrete. Manholes are located at convenient points, the larger sewers being of such dimensions as to admit of inspection by workmen. The street sewer pipes are of clay, and, like the sewers, are surrounded by 0.10 meter (3.9 inches) thick concrete. Ventilation is obtained by means of vertical shafts, 40 to 50 meters (131 to 164 feet) apart, opening upon the street. Storm water inlets are fitted with mud or sand brackets, which are emptied as often as necessary. Storm water outlets open into the river and into a number of the forty-nine canals running through the city.

The rivers are flushed with water, partly from the canals, by means of *spueleinlasse* (sluice ways) and partly from a *spuelgallerie* (cleaning gallery) capable of holding 1,800 cubic meters (5,905 cubic feet) of water. The *spuelgallerie* can be filled twice daily, at present, from the aqueduct supplying Munich with drinking water, and later, from a canal constructed for this purpose, to be connected with the river. By means of the *spuelgallerie* with eleven outlets and the five *spueleinlasse*, an abundant and thorough flushing is obtained of the network of sewers upon the left of the Isar. The *spuelgallerie* reduced the cost of flushing from 0.38 mark (9 cents) to 0.35 mark (8½ cents) per meter.

For storm water and house drainage, there is a tax of 12 marks (\$2.85) for each meter frontage of the building, and an additional tax of 20 marks (\$4.76). For water-closets, there is an annual tax of three-fifths of one per cent of the income derived from the house; if occupied by the owner, the rate is fixed by a commission.

Of the 12,052 houses in Munich, 7,021 are on streets supplied with sewers, and have complied with the law requiring them to connect for storm water and house drainage.

In October, 1893, an order permitting water-closets to connect with the sewers went into effect, and by the close of the year, 674 out of the 7,021 houses mentioned had availed themselves of this additional privilege. With this exception, and a few directly over the canals, water-closets throughout the city open into cesspools or vaults. These, however, will be rapidly filled, now that the sewerage system has reached its present stage.

#### DISPOSAL OF SEWAGE.

At this time, sewage flows into the River Isar. The main outlet sewer, 6,408.5 meters (21,025 feet) long, has a fall of one meter in 595, and opens into the river far below the city. When the system is complete, all sewage will pass into this main outlet channel, the solid matter will be separated by a sieve and burnt, the fluids passing into the river. It is believed that, owing to the rapid flow of the Isar, the water will quickly purify itself and the river escape pollution. Should this, contrary to all expectation, prove an error, then the city must introduce either a *Klärbasin* or *Rieselfeld*.

No deodorizers are used.

#### DEATH RATE.

Following the adoption of the present system of sewerage and water-works, the death rate of Munich fell from an average of 35 per 1,000 in 1873-1882 to an average of 30 per 1,000 in 1882-1890. The annual average of typhoid cases fell from 595 in 1866-1880 to 104 in 1881-1888. I believe it obvious that this decrease is due to the pure drinking water brought to the city, and that Munich may look for a still further reduction following the completion of the improved sewerage system.

RALPH STEINER,

MUNICH, September 17, 1894.

Consul.

## ROME.

The sewerage system of Rome is the ordinary system of sewers flushed with water. The sewers carry off both the storm water and the drainage from the houses. A few dry wells and sinks still exist, but they are being rapidly done away with. In old Rome, the sewers are washed out by an abundance of water that passes into them from the houses and from the numerous public fountains. In the new quarters of the city, on high ground, reservoirs have been built from which water is frequently turned into the sewers.

## COST.

Ancient sewers, constructed 2,400 years ago, are still in use. Of the famous "Cloaca Maxima"—originally 600 yards long—170 yards still serve. The distinguishing feature of the "Cloaca" is that it was built of huge blocks of hewn stone, joined together without cement. From time to time, as the city has extended its limits, new sewers have been built and ancient sewers repaired. It is, therefore, difficult to state with any accuracy what the cost of the city sewers has been. At the present time a sewer runs under nearly every street. In 1870, the total length of the main sewers was 42,217 yards. From 1870-1883 the commune of Rome built 35,380 yards of sewers at a cost of \$750,000. The new quarters of the city built up since 1883 will, in time, be supplied with sewers measuring 54,710 yards, of which 40,000 yards had been constructed at the beginning of 1891.

The length, in yards, of main sewers are as follows: Colosseum, 909; Suburra, 1,200; Guiditta, 1,100; Rotonda, 1,209; Foro Agonale, 750; Minerva, 570; Olmo, 425; Trevi, 900; Portico d'Ottavia, 600. These large sewers are built of brick faced with lime, are ovoid in shape, and measure  $8\frac{1}{4}$  by  $6\frac{1}{2}$  feet. The other sewers measure  $5\frac{3}{4}$  by  $3\frac{1}{2}$  feet and  $4\frac{3}{4}$  by  $3\frac{1}{4}$  feet. The small sewers that communicate with the houses measure 3 by 2 feet. The older sewers were generally rectangular in shape, and were narrow.

## DISPOSAL OF SEWAGE.

The sewers now empty into the River Tiber within the city limits.

Work is being pushed on the two great collectors, which will follow the banks of the Tiber within the city on the right and on the left sides. All the sewers of the city will empty into these collectors, which will carry the sewage a considerable distance down stream, beyond the city limits. Dimensions of the collectors are 13 by 15 feet. The great collector on the left bank of the Tiber will pass through a tunnel under the Aventine and empty into the river 1,000 yards beyond St. Paul's Gate. In this way, when freshets occur in the river, the water will no longer be forced back into the sewers, as is the case now.

## FLUSHING SEWERS.

A reservoir, of 264,170 gallons' capacity, with a never-failing supply of 1,709,179 gallons of water, has been built in the upper part of Rome; it supplies 97 automatic discharge pipes that serve to flush the sewers of the Esquiline quarter. A second reservoir, of a capacity of 1,585,020 gallons is now being erected near the Porta Maggiore. In the Spithœver quarter, the sewers are flushed with 4,226,700 gallons per day. A third reservoir, of a capacity of 211,336 gallons, on the Piazza Termini, supplies the water for watering the streets Via Nazionale and Victor Emanuel.

Rome is unsurpassed for her excellent and abundant water supply. Four great aqueducts bring into the city 61,185,618 gallons per day, or 136 gallons per inhabitant.

## HOUSE DRAINAGE.

Practically, every house is drained, its drainage passing into the sewers through pipes or brick conduits, without any special device.

## LABOR.

Owing to the topography of the city, which permits giving a good incline to the sewers, and to the abundant supply of water, it rarely happens that the sewers have to be cleaned out, the flushing being sufficient. There are, consequently, no regular laborers employed in the sewerage department. The public and private sewers are built by contract work.

## DISPOSAL OF SEWAGE.

The solid matter is not separated from the fluid, nor is any use made of the sewage, which passes into the river.

No deodorizer is used.

## DEATH RATE.

As the sewerage system of Rome dates back for centuries, and is still of the same character, no accurate comparison can be made of the death rate at the present time with that in the past. The present sewerage system, in its hygienic effects, meets the public requirements. The public health has been good for years (barring malaria), epidemic and infectious diseases obtaining no foothold.

WALLACE S. JONES,

ROME, *November 1, 1894.*

*Consul-General.*

## ROTTERDAM.\*

The greater part of the city of Rotterdam lies below the level of the sea, as well as below the level of the River Maas, on which it is situated. The construction and operation of a satisfactory system of drainage are thus accompanied by difficulties of a rather unusual nature, which, however, have been successfully overcome.

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\* Received after the remarks introducing this series of reports were electrotyped, which accounts for the fact that Rotterdam is included among the consulates from which "no replies" had been received.

For sewerage purposes, the city has been divided into three distinct sections, each provided with a large pit or basin, into which the foul sewage as well as the surface water is collected by means of the ordinary combined water-carriage system. The sewer pipes are made of strong cement, and are egg-shaped—that is, their cross section presents the outlines of an egg resting on its apex. This form facilitates the flow of sewage when the pipes are but partially filled, a matter of great importance where the gradient is necessarily very slight.

When the surface water and waste house water are insufficient for flushing the sewers, water from the numerous canals and ditches that intersect the city and environs is easily obtained. By this means, the sewers are thoroughly flushed and cleansed at regular intervals. The loss of water to the canals is made good from the river, and by the circulation thus secured they are kept tolerably fresh.

#### DISPOSAL OF SEWAGE.

By means of powerful steam pumps, the sewage thus collected in the basins is discharged through iron pipes into the river. Pumps of American construction (the Worthington) have lately been introduced and are found very satisfactory both as regards work done and fuel consumed. At the largest pumping station two of these pumps, of a combined capacity of 80 cubic meters (2,825 cubic feet) per minute, are now in operation, and a third pump of an older and different construction is kept in reserve. The sewage thus discharged is absorbed and carried off, without any apparent pollution, by the vast volume of the river, which, at this point, is about one-third of a mile broad and from 25 to 30 feet deep, and is computed to empty daily into the sea some 70,000,000 cubic meters of water.

There is, however, one point of danger. The reflux of the river for four hours during flood tide carries the sewage from the upper or eastern pumping station back beyond the *prise d'eau* [intake] of the public waterworks. To prevent the possible pollution of the city water from this source, no water is taken into the basins or reservoirs of the waterworks until two hours after the inception of ebb tide.

The present population of Rotterdam proper is about 235,000. The suburbs are as yet not drained by the city sewage system; but all houses in the city are directly connected with the sewers, except those located on the river and harbors, which latter discharge their liquid refuse directly into the running water.

All solid waste from houses and streets is gathered daily and carried to the dumping grounds to be sold for fertilizing purposes. The revenue derived from this source is about \$32,000 a year.

#### COST.

The cost of maintaining the street-cleaning service was, for the year 1893, \$96,000. The total cost of the sewerage system of Rotterdam can not be stated, as it has been constructed at different times, and parts of it in con-



nection with other public improvements. The whole system, however, has been overhauled since 1889 at an expense of about 1,000,000 florins (\$400,000). This includes the purchase of the Worthington pumps now used. The annual expense for operating the pumps and maintaining the machines and building connected therewith, is about 43,000 florins (\$17,200).

## DEATH RATE.

The following table shows the death rate for Rotterdam per 1,000 inhabitants for the years 1840-1893:

Year.	Population.	Deaths.	Year.	Population.	Deaths.
1840-1860.....	90,663	34	1888.....	197,722	20.79
1860-1875.....	113,705	33	1889.....	201,858	22.47
1875-1880.....	137,438	27.8	1890.....	209,137	22.19
1880-1885.....	157,206	25.1	1891.....	216,679	20.37
1885.....	173,884	22.81	1892.....	222,230	22.42
1886.....	190,545	23.71	1893.....	228,597	21
1887.....	193,658	21.02			

While the sanitary condition of Rotterdam has steadily improved with the extension and completion of its present sewerage system, as may be seen from the above table of mortality, the credit for this can not be given to the drainage system alone. Other sanitary precautions and improvements, chief among which the recently completed city waterworks, have no doubt contributed toward the above result.

LARS S. REQUE,  
*Consul.*

ROTTERDAM, *January 9, 1895.*

## ST. PETERSBURG.

The sewerage system of St. Petersburg is an old and primitive one, having existed since the foundation of the city. It consists of wooden pipes, laid sometimes in the middle and sometimes on both sides of the street. These receive the surface water through ordinary drains. No artificial flushing with water is resorted to. On the 2d of August, 1884, an ordinance was passed permitting houses to be drained into the city sewers, and consequently most of the houses are now connected by drains with the city sewers, into which all the liquid sewage is carried and emptied into the River Neva or into the various canals intersecting the city. Some important buildings and institutions have their own connections with the river or canals.

## DISPOSAL OF SEWAGE.

All the sewage in the houses, including slops from the kitchen and bathrooms, and the fæces of the privies, is carried into cesspools, from which the liquid and some sludge is drained into the street mains. The solid

matter is scooped out and carried out of the city, in box-like carts, to be dumped on waste ground around St. Petersburg. It is deodorized by sphagnum powder, and used as manure. As there is nothing in this simple system of sewerage to serve as a model for other cities, or to suggest an idea of possible improvement in other systems, it appears unnecessary to enter into more details.

As most of the sewage of this great city, with a population of more than 1,000,000 souls, is thus carried into the canal courses and the River Neva, the water necessarily becomes unclean, and, in warm weather, the canals of St. Petersburg emit an odor which reminds one of the exhalations of the rivers of certain other cities, where they are made the receptacles of sewage.

#### DEATH RATE.

The soil of St. Petersburg, originally a marsh, also becomes more or less saturated with the liquid impurities from the sewers, drains, and cesspools, and these conditions doubtless contribute to the high figure of mortality in this city, there being annually 30 deaths to 1,000 inhabitants. In a city having a modern system of sanitation, the yearly death rate should not exceed 12 per 1,000; hence, the death rate of St. Petersburg is  $2\frac{1}{2}$  times as high as it should be under improved sanitary conditions. If, by the introduction of modern sanitary arrangements, among which an improved system of sewerage stands foremost, the death rate of St. Petersburg could be reduced only to 18 per 1,000, it would make 12,000 deaths per year less than at present; and, if we take into account the sickness which would thereby be prevented, the saving of human capital and suffering would be enormous.

#### THE LIERNUR SYSTEM.

An improved system of sewerage has, so far, been introduced in St. Petersburg only experimentally, and by private enterprise. It is the pneumatic system invented by Charles Liernur. Mr. G. A. Soloduchin, a rich merchant of this city, constructed, at his own expense, a so-called *poudrette* factory, according to Liernur's principle, on the Semenow square belonging to the Ministry of War, into which the contents of the privies of two military barracks, and of the first gymnasium, located in the near neighborhood, are pneumatically carried and worked into *poudrette*, or dust. Nearly twenty years ago, Mr. Soloduchin invited Captain Liernur to St. Petersburg, and, under his direction, the *poudrette* works on Semenow square were built, and are large enough to clean at least one-sixth of the whole city daily. Since that time, Mr. Soloduchin has been agitating the general adoption of Liernur's system of sewerage. In 1874, the city council of St. Petersburg appointed a committee to report upon the best method of sewerage. The committee, after much delay, reported in the year 1888 in favor of Lindley's flushing system; but the executive committee of the city council gave its opinion to the effect that it is impossible to decide which system is the best before an actual trial, and that the topography of St. Petersburg may demand the in-

roduction of one system in a certain district and of another system in another district. Nothing has been done, as yet, by the city authorities to change the present antiquated system of sewerage, but it seems probable that, before long, some improved system will be adopted and carried out with that energy which characterizes all Russian public enterprises when they have been once decided upon.

The *poudrette* factory on Semenow square is a large stone building roofed with iron. The motive power consists of two locomotives driven by two air pumps. The sewage pumped from the privies is collected in three cylindrical iron reservoirs, each containing 300 cubic feet. These reservoirs are provided with vacuum meters and regulators. The cast-iron pipes connect two barracks with the factory. The air pumps are arranged so that they drive the gases pumped out of the privies into the furnaces where they are burned, so that neither at the factory nor in the privies is there any offensive smell.

The city sanitary committee investigated the workings of the pneumatic system, and on the 12th of June, 1887, submitted a report declaring the same to be satisfactory. This system, applied on a large scale, may be briefly sketched as follows:

The city is divided into districts, in each of which there is established a central station, containing a steam engine, pumps, and a metal reservoir, from which lead cast-iron mains under the streets, and from these, feed pipes into the houses and yards, as is the case in gas and waterworks. The pumps drive the sewage from the houses into the reservoirs of the central stations, and from there it is pneumatically driven into the main reservoir outside of the city. On its way there it passes through heated cylinders and becomes so dry as to change into dust. The generated gases are burnt in the furnace of the steam engine, emitting no odor whatever. The volume of the gases is so great that, to maintain the steam pressure, only one-fourth of the ordinary amount of coal is necessary.

Mr. Soloduchin says in regard to the expense:

It is a groundless assertion that the manufacturer of *poudrette* does not cover the costs. I have satisfied myself of it by years of experience. In the last few years I have been receiving from *zemstvos* and private landowners in all parts of Russia a large number of letters asking me to send them *poudrette*, and I can not satisfy them all.

Concerning the working of the pneumatic cleaning process in detail, he observes:

It causes no inconvenience to the person occupying the "seat." The lower opening of the funnel, which has about  $4\frac{1}{2}$  inches in diameter, connects with the siphon of the drain pipe, in which siphon there is a certain quantity of dirt or slush shutting off the air in the drain pipe from the air in the privy. This quantity is, of course, renewed at every use of the privy; hence it was found possible, in Amsterdam for instance, to locate privies next to occupied rooms or kitchens. In case of infectious diseases, it is very easy to thoroughly disinfect the excrement in the siphon. Liernur extended his system of sewerage, also, to the refuse of kitchens, slops, and street mud. The main object of the system, however, is the removal of human excrement and their utilization as manure. Consequently, it is plain that this system is beneficial in its results for the denizens of cities as well as for farmers.

The Liernur system of sewerage has been used in a number of European cities, especially in the Netherlands, for many years, and seems to have given full satisfaction. Official reports of the city of Amsterdam give the whole expense of the turning of sewage into *poudrette* at 4.78 marks (\$1.14) per inhabitant, per annum, upon the basis of a density of population of 300 to the hectare (2½ acres). The pneumatic moving of the sewage is put at 22 cents in this calculation. With a density of population double as much as the foregoing, it would cost only 14 cents. This cost comprises wages, fuel, and other expenses; also, interest on the investment and the sinking fund charge at 5 per cent. The sewage is removed 310 times in the year—that is, almost daily—without any inconvenience to the people in the houses or on the streets. The value of the dust manure made from the sewage covers the whole working expense of the system and leaves a considerable margin besides. The city authorities of Amsterdam think the system deserves to be recommended in regard to its technical, hygienic, and æsthetic advantages, and the “Chief of the Pneumatic Canalization of Amsterdam, Nassaugade 117,” is ready to give the magistrates of other cities any information concerning the construction thereof.

CHARLES JONAS,  
Consul-General.

ST. PETERSBURG, *September 3, 1894.*

#### STETTIN.

Stettin has the old flushing sewerage system, which has been in use for the last fifteen years. The street canalization takes up all the rain, household, and closet water and discharges it into the River Oder.

The total length of the system now in operation is given with the kind of construction material as follows, viz:

Construction material.	Length.*	Dimensions.*
	<i>Running meters.</i>	<i>Centimeters.</i>
Masonry.....	1,748	66
Beton pipes.....	835	66
Do.....	2,990	66
Do.....	2,088	66
Do.....	6,578	66
Do.....	895	66
Round.....	2,474	60
Do.....	2,347	50
Do.....	8,985	40
Do.....	2,796	40
Do.....	7,420	35
Clay pipes.....	187	40
Do.....	1,082	35
Do.....	16,034	30
Do.....	6,860	25
(Rain inlets).....	11,601	20
(House connections).....	20,253	20

\* 1 meter = 39.37 inches; 1 centimeter = 0.3937 inch.

## COST.

The total cost of constructing the sewerage system was 3,125,450 marks (\$743,875.10). The cost of construction per meter was 49.2 marks (\$11.71).

## HOUSE DRAINAGE.

The number of houses drained is 2,497.

## LABOR

The number of laborers daily employed for operating the system is sixteen, and four teams, with four drivers. The wages paid are 65 cents a day per man for ten hours' labor.

## DISPOSAL OF SEWAGE.

The sewage, at present, is disposed of by letting the uncleaned fluid into the River Oder, which has a good flow and plenty of water, but the State officials recommend, as soon as practical, that the system of Rothe-Röckener should be built in accordance with the Essen cleaning process. The cost of cleaning will amount to about one cent per head of the population.

The irrigation system, or Rieselfelder system, such as Berlin, Breslau, and Dantzic have, can not be introduced at Stettin, owing to the topographical conditions.

The sink wells at the houses, which contain the solid matter, are cleaned occasionally, when filled, and the matter is carted away by the farmers of the neighborhood, who make use of it for manure. Pumping machines have lately been introduced for this purpose. The cost of carting and taking away is almost counterbalanced by the value of the matter, so the property owner has no expense from it.

## DEODORIZERS

Disinfection is practiced during the summer months with chloride of lime.

## DEATH RATE.

During the year 1892-93, 3,153 persons died in a population of 125,000.

F. W. KICKBUSCH,

*Consul.*

STETTIN, *September 4, 1894.*

## STOCKHOLM.

The sewerage system of Stockholm is built according to the so-called combined system—that is to say, it not only carries off the waste-water of the buildings, but the rain water also. Its construction is such as to make it self-cleansing. Only in very few places of low grounds has it been necessary to put in flushing valves. The present system was begun in 1864 and

continued gradually up to this date. It extends throughout the regulated streets of the city.

#### COST.

The total cost of construction at the end of last year amounted to \$1,232,480. The main sewers have an inner diameter of from 2 to 6 feet, are built of cut granite, and have an oval, round, or tunnel-shaped intersection. Their length is, altogether 56,643 feet, and the cost \$653,269. The other main sewers consist of stoneware pipes of 1.55 feet diameter, and have a total length of 291,168 feet, and cost \$579,211.

The premises united with the sewerage system number 4,069. The cost of the general system has been defrayed by the city, but as soon as the system has been laid to the site of the building the owner of the building defrays the expenses within the same. No waste or rain water must be allowed to escape into the streets. The method of draining is such that all the conduits, from kitchens or other local sources, where waste may exist, are led into one or more earthenware drums (fountains) which are provided with magazines for the solid matters and traps. The ground water of the premises is drained or led off by the gravel bank which has been laid around the canals and pipes. The annual cost for operating the system, which chiefly consists in the cleansing of the rain-water wells in the streets, amounts to about \$6,700. The ordinary number of workmen, except car drivers, is twelve, who work six hours a day.

#### DISPOSAL OF SEWAGE.

The sewage empties into the place where the water of Lake Malar flows into a bay of the Baltic Sea. In a few places, it is led into creeks flowing into the Malar. The solid matter which follows the water in the street accumulates in the water wells and is removed when necessary, generally, two or three times a week.

#### DEODORIZERS.

Disinfection or deodorizing of the sewage are not deemed necessary, as water-closets are only allowed in exceptional cases. The barrel or carriage system is generally used. The question of manufacturing dry, transportable manure from the solid matter is being agitated. The water-closet system has not been practiced, principally on account of the city taking its water supply from a creek, where, in case of high water, the sewage would be brought into contact with the conduit water. The water-flushing system can, on account of the present construction, be introduced at any time.

#### DEATH RATE.

The death rate has diminished from 35.26 per 1,000 in 1875 to 19.27 per 1,000 in 1893. The introduction of the sewerage system has contributed largely to this result.

THOS. B. O'NEIL,  
*Consul.*

STOCKHOLM, *October 15, 1894.*

## TRIESTE.

The sewerage system of Trieste is very primitive, and does not give satisfaction. A change has been agitated for a number of years, and is now in contemplation. The present system—if system it can be called—consists of covered drains on each side of the street, which run finally to the sea. Into these street mains, the drainage from the houses empty.

## HOUSE DRAINAGE AND SEWAGE.

About 6,000 houses are supplied with drains. In these, there is a separation of the solid and fluid matter—the fluid running off to the sea, and the solid matter being taken out, as the exigency of the case requires, and carried some 10 miles from the city, mixed with the street sweepings, and used as a fertilizer. A few houses have a system of sewers which are emptied with a pneumatic machine at a cost of \$1.20 per cubic yard. The others are emptied with barrels and cost 80 cents per cubic yard. Many houses have no sewerage arrangement whatever, and most of the sewage, solid and fluid, goes through the street mains into the sea.

The drains are built of sandstone and cement. The sewers are flushed by rain water only.

## NEW SYSTEM.

The municipal government is now endeavoring to perfect arrangements to change the whole system by building large, deep mains down the middle of the street, having exits into the sea, the erection of reservoirs on the high hills contiguous to Trieste, and the introduction of water into all houses. By this arrangement, the street mains can be regularly flushed with the water from the reservoirs, and the sewerage of the houses will be better and more complete.

## COST.

The cost of the construction of the mains, the erection of the reservoirs, and the expense of the introduction of water into the houses, will be about \$5,000,000.

J. EDWARD NETTLES,  
*Consul.*

TRIESTE, *August 16, 1894.*

## VIENNA.

The city ordinance of 1883, which is still in force, prescribing for house sewerage, pipes, or sewers with passageways and the connection of water-closets with the general sewerage system, was made obligatory. The cheapness and cleanliness of pipes led to their being used not only for houses, but also; to quite a large extent, for streets. They are cleansed with water. A

vertical pipe is connected with the sewerage pipe, an iron valve separating the two at the point of contact. The vertical pipe is filled to a certain height with water, after which the valve is opened and the water, which enters the sewerage pipe with great force, cleanses it most effectually.

The sewers with passageways are cleaned by hand labor, at night, from 4 to 12 times yearly when used for street sewage, and once every month when used for house sewage.

#### DISPOSAL OF SEWAGE.

The sewage thus obtained, after being gathered into wooden buckets of about 3 cubic meters (106 cubic feet) capacity, is hauled to a steamer, on which it is taken to the junction of the Danube with the Danube Canal, and dumped. The cesspools, which still exist in some of the more sparsely populated parts of the city, are also cleaned by hand labor, the solid matter being carted to the Danube, the fluid being pumped into one of the larger sewers.

In spite of the increase of the population of Vienna, there is a constant decline in the quantity of sewage taken out of the sewers by hand labor. In the year 1880, the quantity thus got rid of was 17.45 liters (18.4 quarts) per inhabitant, and in 1891, only 7.06 liters (7.46 quarts), which decrease is attributed to the development of the general sewerage system and to the increase in the use of the pipes and the cleansing of sewers with water. The cleaning of the sewers, pipes, and cesspools is done by contract, under strict municipal supervision, the cost being 2.03 cents per meter (39.37 inches) for cleaning the street sewers, and 1.4 cents per meter for cleaning house sewers.

The water supply is not large enough at present to permit all the sewers to be flushed, but it is being increased with a view to this object.

#### SEWERAGE SYSTEM.

The drainage system of Vienna is, on the whole, fairly satisfactory, the street sewers, which are a considerable distance below the streets, being built as far as possible with reference to the draining of the neighboring houses. In such parts of the city as are troubled with standing waters, drainage pipes of porous clay are built beneath the house sewers and connected with the street sewers.

In the year 1850, the various outlying quarters of Vienna were united with the city proper, and their sewerage systems were put directly under the control of the municipal government. In the year 1891, the general sewerage system was extended to the suburbs which were incorporated with the city. This unification of the city led to important improvements in the sewers, which are gradually being united into a comprehensive and satisfactory system.

In the year 1893, a sewer was commenced on the left side of the Danube canal, which drains the various sewers that emptied within the city limits directly into the canal. This receiving sewer, which is already finished,



empties in the canal some distance below the city. It is 6,950 meters (7,601 yards) long, and has a fall of  $0.4\frac{0}{100}$ . It has a width of 1.50 meters (5 feet), and a height of 2 meters (6.56 feet) at its commencement and a width of 2.45 meters (8 feet) and a height of 1.90 meters (6.23 feet) at its juncture with the canal. It drains an area of 1,130 hectares (2,792 acres). The receiving sewer on the right side of the canal, which is not yet finished, will have a length of 12,269 meters (13,418 yards) and a fall of from  $0.85\frac{0}{100}$  at its commencement to  $0.4\frac{0}{100}$  at the end. At its commencement, it will have a width of 1.65 meters (5.4 feet) and a height of 1.10 meters (3.6 feet). It will be gradually enlarged to a width of 8.3 meters (27.23 feet) and a height of 3.50 meters (11.5 feet).

In all of the street sewers, a free space, with a minimum width of 0.80 meter (31 inches) and a minimum height of 1.1 meters (39.7 inches) is obligatory, while the usual width is 0.84 meter (34 inches) and the usual height 1.26 meters (49 inches). This is in order that they may be passed through.

#### CONSTRUCTION OF SEWERS.

Numerous changes have taken place in Vienna in the manner of constructing sewers. In the year 1859, the bottom of the sewer was built in the shape of a half circle, the wall consisting of a double thickness of bricks. Since 1872, this form of sewer has been superseded by one in which the half circle is changed into a half ellipse, which extends from the bottom of the sewer to the middle of the free space. The walls then rise perpendicularly from the ellipse to a height equal to one-sixth part of the sewer and are finally curved in an arch, in the form of a half circle. The bottoms of the large sewers are either in the form of a segment or an ellipse, and are generally made of Dutch tiles. The bottom is made in the form of a segment, if a considerable flow of water is to pass through the sewer, as it is found that the friction is very great on the bottom, if the latter has the form of an ellipse.

A great advance in the construction of sewers was made when beton was introduced. In the year 1873, a sewer was made of this material, for the first time, and since then it has been employed very generally for street sewers. It is cheaper and has a smoother surface than bricks, besides which, it lasts well and is completely impervious.

Beton is not used when a sewer is near enough the surface of the soil to have its arch affected by frost or the passage of heavy wagons. The sewers made of beton are egg-shaped, the half ellipse in which the lower part of the sewer is shaped being covered by an arch in the form of a half circle. The wall of the upper part of the ellipse is made of one part portland-cement beton to three parts sand, and it is at most only 1 centimeter ( $0.3937$  inch) thick. The sides and bottom of the ellipse consist of one part roman cement beton and four parts sand. The walls of the half circle, or arch above the ellipse, are made of one part roman beton to two parts sand and two parts of small pebbles.

## DEODORIZERS.

Deodorizers are not used in Vienna, and the sewage is not made use of for purposes of fertilization, as in Berlin.

## COST.

Vienna is an easy city to drain, as on the right side of the canal, where the largest part of its inhabitants live, there is an average incline of from 10 to 25 per cent. Although its system of sewerage is not as advanced as that of some of the German cities, it is being constantly improved, and is, on the whole, fairly satisfactory.

In the year 1892, \$130,291 were spent for building and repairs, while the cleaning of sewers and cesspools cost \$140,466.

## HOUSE DRAINAGE.

Of the total population of 1,451,000 at the close of the year 1893, about 1,400,000 lived in houses connected with the general sewerage system which empties into the Danube Canal. One-half of the water used daily in Vienna reaches the canal through the sewers. It is estimated that, in dry weather, it takes this water ten hours before it reaches the canal, and that 1.167 cubic meters (37.72 cubic feet) of which 0.027 cubic meter (9½ cubic inches) consisting of the solid refuse from water-closets, are thus got rid of per second.

As the flow of the Danube Canal, at its normal height, is estimated at 177 cubic meters (6,056 cubic feet) per second, the solid refuse is diluted 6,556 times when it reaches the canal, and when it reaches the Danube, a few miles below the city, it is diluted 50,000 times.

## DEATH RATE.

The following table shows the decrease in mortality :

Year.	Total deaths in Vienna.	Death rate of native population.	Year.	Total deaths in Vienna.	Death rate of native population.
1867.....	32	29	1887.....	25.8	22.3
1877.....	30.2	26.5	1888.....	25.2	21.9
1881.....	29.5	25.4	1889.....	24.5	21.4
1882.....	29.2	25.3	1890.....	24.4	21.4
1883.....	28.3	24.3	1891.....	25.01	*24.25
1884.....	26.8	23.1	1892.....	24.97	24.23
1885.....	28.5	24.8	1893.....	24.04	23.26
1886.....	26.6	23.2			

\* The increase in the death rate was caused by the annexation of the suburbs, where the sewerage system was incomplete.

MAX JUDD,  
Consul-General.

VIENNA, November 8, 1894.

## STREET CLEANING IN VIENNA.

The streets of Vienna are always kept in good condition, for just as soon as the street shows the need of repairing, it is attended to at once.

For the year 1892, the following amounts were expended for street paving and repairing: New streets paved with granite blocks, \$152,000; repairing old granite block pavements, \$292,000; macadamizing new streets, \$35,000; repairing old macadamized streets, \$123,830. There were a few streets paved with asphalt, also.

Vienna is divided into nineteen districts, the inner portion—the most important business quarter—being the old part of the city. The plan of Vienna can be best described by comparing it to a wheel, the first district being the hub, and the other eighteen districts the spokes.

The sprinkling of these districts is done very thoroughly and systematically by sprinkling wagons and rubber hose. The rubber hose, which is about 2½ inches in diameter and 400 feet long, is connected with a fire plug, when water is required. After the area in the neighborhood has been sufficiently sprinkled, the hose is rolled on a reel and carried to the next fire plug. The streets are washed in this manner three times daily.

The total amount of money spent for sprinkling an area of 6,031,562 square yards in the year 1892, water being furnished free, was \$134,302; 5,097,661 square yards were sprinkled twice a day by wagon, using daily 1,270,065 gallons of water; 933,900 square yards were sprinkled three times a day with rubber hose, using 611,858 gallons of water daily.

Like all large cities on the Continent, Vienna has very clean streets. The method of keeping them in such condition is very simple, and there is no reason why the same results should not be obtained in the United States, if enough money be appropriated, to have the work done properly.

The street-sweeping department is in charge of salaried officers as follows: Inspector, per year, 2,100 florins (\$842.60); comptroller, per year, 1,700 florins (\$690.20); office man, 720 florins (\$292.32) and lodging; assistant, 600 florins (\$243.60). Two hundred and eight laborers are daily engaged in sweeping streets where no machines are used; they use long reed brooms of material similar to that used in the United States. They are paid 1.30 florins (52.8 cents) for night work, from 11 p. m. to 5 a. m., and 1 florin (40.6 cents) for day work. On streets where the sweeping machine is used, fourteen men are employed to do the preparatory work. They are paid more than the common laborers, receiving 1.60 florins (65 cents) for night work, and 1.40 florins (56 cents) for day work. Ten overseers get 2 florins (81.2 cents) each per day. The head of the sweeping department can employ twenty-five additional men daily to assist in getting the streets cleaned. The wages paid to this extra force are charged to the fire department.

The dirt gathered daily from the streets was formerly dumped on large fields near Florisdorf, about 4 miles from this city, but recently the street department made arrangement with the various railway lines by which it is taken, in the night, to the country, where farmers cart it from the station and are glad to be able to purchase such an excellent fertilizer.

Up to June, 1894, all the districts were swept and kept clean by contractors. Here, the contractors are not told how often to sweep the streets, but the different contractors, in bidding for their work, are asked to make a bid for keeping their respective districts clean, and the overseers in the employment of the city compel them to live up to their contracts. The judges as to whether the streets are clean or not are not the contractors, as the case too often is elsewhere, but the officials of the city.

In 1892, the cleaning of the first district, covering 407,613 square yards, cost \$138,241, the contractors who did this work having in use ten small sweeping machines and twenty-one snow plows. In other districts the pay was arranged differently. Various smaller contractors were paid all the way from 25 to 50 cents per load of dirt or snow. The total sum expended for sweeping the streets of Vienna and for hauling the dirt away was \$582,320 in 1892.

From this year on, the city will do its own street cleaning. It has purchased a number of sweeping machines, snow plows, etc., has engaged on an average 208 laborers daily, and expects to do the work better and more economically than under the old system.

MAX JUDD,  
*Consul-General.*

VIENNA, *November 6, 1894.*

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## GERMAN EXPORTS OF IRON AND STEEL.

In a former report of this series,\* reference was made to the growing anxiety of ironmasters in Great Britain, on account of the steadily increasing imports into England and the British colonies, of iron and steel from Germany and Belgium. The subject assumed so serious an aspect that the British Iron Trade Association several months ago instructed its secretary, Mr. J. Stephen Jeans, to make an exhaustive study of the situation and to submit his conclusions in a report, which was presented at a meeting of the association in June last, and has since been published. The purpose of the examination and report was to determine the exact nature and extent of this competition, and to measure as accurately as possible its probable permanence. As the German metal exporters have become active competitors, not only in England and the British colonies, but in South and Central America, as well as to some extent in the United States, a careful estimate of their advantages, as seen from a British standpoint, may be of practical

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\* See CONSULAR REPORTS No. 155 (August, 1893), p. 385.

interest in our country at a time like the present, when the narrow margin between the cost and selling prices of steel and iron gives to each item of economy in manufacture an unusual importance.

The report begins by stating that whereas, in 1870, Great Britain imported from all countries only 102,000 tons of iron and steel—nearly three-fourths of which was bar iron of a special quality as material for crucible-steel manufacture of Sheffield—these imports had risen in 1890 to 324,000 tons, by far the larger portion of which was supplied by Germany, which country in 1893 exported to England and six principal British colonies 208,000 tons of steel and iron, being about 18 per cent of the total German export for that year. This was 70,000 tons more steel and iron than Germany exported during that year to the entire American continent, excluding Canada as a British dependency, which received from Germany only 2,724 tons. When it is remembered that barely fifty years ago Germany received fully one-half of her entire supply of iron from England, this complete reversal of the course of traffic may well provoke beyond the British Channel a serious inquiry into its causes and conditions.

As might have been anticipated, the report traces the present formidable strength of the German iron and steel makers to a steady, systematic development, which began with the abandonment of charcoal furnaces and the adoption of coke as blast-furnace fuel, and to the contemporaneous discovery of the basic steel process, which, from about 1878-79, opened to their use the enormous deposits of iron ore in the Moselle region and Luxemburg. Prior to that date these minerals could be worked only in admixture with large proportions of costly imported ores from Spain, Elba, and Algeria, but the adoption of the basic process brought into general use these cheapest ores of continental Europe, so that the German output of manufactured iron and steel rose from 2,058,000 tons in 1878 to 3,162,000 tons in 1882, an increase of 54 per cent in four years, with a corresponding increase in exports and decrease in the imports of these metals for domestic consumption. Comparing the progress of the iron and steel industries of Great Britain and Germany in each principal department or class of product during the decade from 1882 to 1892, the surprising fact is revealed that while the German output of pig iron increased by 46 per cent that of Great Britain decreased by 22 per cent.

During the same period, the steel production of Great Britain increased 41 per cent, while that of Germany was augmented by 83 per cent; and, to complete the picture, German exports of iron and steel increased by 11 per cent, while those of Great Britain declined to the extent of 37 per cent.

The basis of all competition in the metal industries is, of course, the cost of producing pig iron of qualities adapted to the manufacture of finished iron and steel. The essential requisites are cheap ores and fuel, cheap transportation for raw materials, tractable and not too costly labor, and the employment of the most advanced processes and equipment. In all these requirements the Germans are liberally and fully endowed. Lorraine and

Luxemburg furnish them a practically exhaustless supply of ores, which are officially valued at 50 to 51 cents per ton at the mines. The railways are principally owned and worked by the State, and were not only cheaply built but are operated not merely to earn money, but to a certain degree, in the interests of general commerce and manufactures. The mines of Silesia, Westphalia, and the Saar region produce an abundance of good coking coals, which are, however, somewhat more costly than coal of similar grades in England and the United States. But just at this point, the technical skill of the Germans is brought to bear, and they are enabled to more than offset the higher prices of their coal and other incidental disadvantages by cheaper railway freights than are available in England, and by the profits and economies which they command in the manufacture of coke through their saving of the gas, tar, ammonia, and benzole, which are developed by the coking process.

There are at work in Westphalia alone 9,602 retort coking ovens, which save the gas, 998 of which reclaim also the secondary products of coke manufacture. In Silesia and the Saar district, the same process is more or less generally employed, while England, with the exception of 400 or 500 retort ovens, still follows the wasteful methods which the United States have hitherto imitated, and makes coke in primitive "beehive" ovens, which not only produce from 8 to 12 per cent less coke from a given weight of coal, but waste the volatile elements from which the Germans and Belgians derive an important revenue.

In a recent number of Kùhlw's Trade Review, there is quoted from a Glasgow journal a reference to this subject, as follows:

There is a conservatism in the British manufacturing world which sometimes leads to our falling behind all other nations. One of these instances was recently brought before the North of England Gas Managers' Association at Durham, and has reference to the manufacture of coke. The Association \* \* \* visited Molton colliery, about 7 miles from Durham, to see at work a new coking plant which had just been erected, \* \* \* and were informed that the system, while it has been extensively adopted in Germany, has scarcely been tried in the United Kingdom. According to Colonel Sadler, the use of this process is sufficient, apart from all questions of wages, to enable the continental ironmaster to undersell the British.

There are now in operation in Great Britain 15,700 coke ovens, of which, so far as can be ascertained, only 523 are of the retort type. The other 15,177 ovens produce annually 7,700,000 tons of coke, and it is estimated by M. P. Mollet, president of La Société Technique de Gaz, in France, that if all this coke were made in retort ovens, there might be saved from the gases of distillation which are now wasted, 110,000 tons of sulphate of ammonia, worth about \$6,930,000; 375,000 tons of coal tar, worth about \$3,000,000; and 3,000 tons of benzole, worth about \$1,071,438; or a total economy of \$11,001,438, to say nothing of the gas saved and utilized as fuel and for illuminating purposes.

Starting, therefore, with cheap native ores, and possessing almost equal facilities for importing Spanish, African, and Scandinavian ores for admix-

ture, the Germans are able, through superior skill and economy in coke making, to balance the higher cost of domestic coal. Thus far, then, the conditions are, on the whole, at least equal in favor of Germany. The other advantages which operate in their behalf are stated by Secretary Jeans in his report to be (1) the lower rates of wages paid in Germany than in England; (2) the cheaper freight rates that are charged by the State railways in Germany than by the British roads, which are owned and operated by private companies; (3) the more tractable character of the German workmen, their more ready submission to discipline and less ready inclination to strikes and disorders; (4) the governmental conditions which enable the German ironmasters to sell their product to home consumers for higher prices than they are willing to accept abroad; and, finally, the lower royalty-rents which are imposed in Germany than in the United Kingdom.

Into the questions of wages, tractability of workmen, the effects of fiscal legislation upon home markets, and royalty rents, it is not the purpose of this report to enter, but the item of rail transportation is so intimately involved with that of export traffic that some allusion to the more recent aspects of that topic is essential to a full statement of the case.

The report of Secretary Jeans states, in substance, that German railway rates for coarse freights are, in general, far cheaper than those of Great Britain; that the German roads cost in construction, mile for mile, but little more than half as much as the English lines, and being chiefly State property, are administered not merely with a view to their earnings, but in the general interest of business; that special low rates are granted in Germany to freight intended for export; and, finally, that in some cases, the effect of these differences against the English ironmasters "is phenomenal."

Apropos of this, and by way of showing that the railways of Prussia, notwithstanding their apparent consideration for home industries and export traffic, are by no means operated at a loss from benevolent motives, it appears from a recently published statement by Professor Cohn, of Göttingen, that the State railways, after paying interest on their borrowed capital, paid over during the ten years from 1882 to 1892, \$204,393,000 into the general treasury of Prussia. A large part of this revenue has been spent on the German waterways—canals and navigable rivers—which have been greatly improved, and have been meanwhile operated at such low rates of toll that whereas the average annual expenditure in waterway improvements has been \$6,190,475, the yearly revenue from canal and river tolls has hardly exceeded \$476,000.

There are economists here, as in France, who begin to doubt the justice of thus spending so much of the surplus earnings of the railways for the improvement of internal water lines, which, it is argued, benefit enormously certain districts at the expense of the entire country, and thus give undue advantages to wealthy firms which are able to establish their industries in advantageous situations along canals and improved rivers, and to crush the competition of less favored rivals. There is growing up in Prussia a strong feeling against thus taxing the entire State for the benefit of certain localities

which are already naturally favored, and this sentiment finds expression in an increasing demand that tolls on the canals and rivers shall be raised, and that railway passenger fares, which are now relatively higher than rail freights, shall be proportionately reduced.

FRANK H. MASON,  
*Consul-General.*

FRANKFORT, *November 28, 1894.*

# PRODUCTION OF PIG IRON IN GERMANY.

The following table shows the production of pig iron in Germany from 1882 to 1893, as published by the statistical bureau of the Association of German Iron and Steel Manufacturers:

Year.	Production.	Year.	Production.
	<i>Tons.</i>		<i>Tons.</i>
1882.....	3,380,806	1888.....	4,337,421
1883.....	3,469,719	1889.....	4,524,558
1884.....	3,600,612	1890.....	4,658,451
1885.....	3,687,434	1891.....	4,641,217
1886.....	3,528,658	1892.....	4,937,461
1887.....	4,023,953	1893.....	4,953,148

Compared with the other European pig-iron producing countries, Germany alone presents a steady increase. In England, the amount of production has been oscillating between 8,586,680 tons in 1882 and 6,829,841 tons in 1893. The following table shows the quantity of pig iron produced in England in the years named:

Year.	Production.	Year.	Production.
	<i>Tons.</i>		<i>Tons.</i>
1880.....	7,649,233	1890.....	7,874,130
1882.....	8,586,680	1892.....	6,722,737
1884.....	7,881,727	1893.....	6,829,841
1886.....	8,009,754		

In France, the limits of oscillation are the figures of 1882 (highest) and 1886 (lowest). The following table shows the production of France:

Year.	Production.	Year.	Production.
	<i>Tons.</i>		<i>Tons.</i>
1880.....	1,725,293	1890.....	1,962,196
1882.....	2,067,387	1892.....	2,057,258
1886.....	1,516,574	1893.....	2,032,567

The production of pig iron is the basis of all modern industries—the barometer of industrial life. If the production is decreasing, there is indus-



trial retrogression; if, however, the production is on the increase, that is certainly a sign of growing activity in the industries of a country.

Though England is, as yet, producing nearly as much pig iron as France and Germany together, her output has, nevertheless, taken a downward course, while that of Germany proves to have taken larger dimensions every year.

Assuming that England's annual decrease and Germany's annual increase will continue at the same rate, the two countries will meet on the same level in only a few years, and a few years more added will give this Empire the second place among the pig-iron-producing countries, the United States being the first.

This constantly increasing production of pig iron in Germany is the result of the growing demand for this material which has arisen from its use in the manufacture of machinery and tools, railway, ship, and bridge building, and all the other branches of manufacturing industries of which iron is the material factor. The growing demand for the raw material is due to a growing call for the manufactured article, which again means an extension of the market for these goods. Germany is untiring in her search after new markets. The good organization of export associations, the Government aid through its department of commerce, and, above all, the intelligence of the mercantile classes make it possible that the unceasing efforts are crowned with success. The "slow, impracticable, theoretical" German business man is, after all, a keen, practical, experienced, intelligent sort of fellow, and his methods would be worthy of study and partial imitation.

THEODORE M. STEPHAN,

*Consul.*

ANNABERG, *November 20, 1894.*

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## CONDITION OF RETURNING EMIGRANTS.

As is well known, large numbers of persons who emigrated to the United States in former years are now returning to Europe in search of employment. They are people who have saved at least enough to pay the cost of the trip, and therefore belong, for the most part, to the better class of immigrants. Not infrequently, families that have become American citizens, with children who were, perhaps, born in the United States, arrive in Switzerland, for instance, after expending their entire resources for the trip. They are impelled to take this serious step by the same hope of improving their material condition that once led them to seek a home in the new world. So far as this part of Europe is concerned, these hopes are generally far from being realized, for there is hardly employment enough for persons already settled here.

The chief branches of business in the centers of Basle and Neuchatel—ribbon-weaving, watchmaking, and the manufacture of colors and chemicals—are not enjoying a period of especial prosperity, and are by no means in need of an increased number of operatives. The building trades and

day labor are more than amply supplied by the resident working people, and by the large number of Italians whose services are sometimes employed to the exclusion of the natives of the country on account of the extremely low wages with which they content themselves. The consequence is that the returned emigrants often find themselves in a state of complete destitution soon after their arrival. While seeking in vain for employment, they have parted not only with their money, but also with all the clothing and effects they can spare. American citizens and others in this unfortunate situation often apply for assistance to return to the United States, having the impression that there are Government funds available for that purpose. "If I could only get back home I should be all right. I could earn something at least, but here I shall starve," is the expression which, with many variations of form, is now constantly heard. Some of these people, to be sure, are not especially deserving, and have no claim to assistance as American citizens; but there are enough of the latter, who are at the same time honest and industrious men, to make the matter one of serious consequence. The resources they sacrifice for the trip to Europe, and while looking for work here could, it seems to me, be better used in awaiting a complete revival of business at home, even in cases where it is impossible to find employment at reduced wages, for here business is duller and wages lower than in the United States, so that, even where a returned emigrant finds work, it will take him a long time to earn enough to go back to the United States, should he ever desire to do so.

GEORGE GIFFORD,

*Consul.*

*BASLE, November 17, 1894.*

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### AMERICAN FLOUR IN FIJI.\*

The standard of living in Fiji may be said to be fairly good, especially at the chief centers of trade in these islands. The white population numbers about 2,000, one-third of whom live in the two principal seaports, namely, Suva (the capital) and Levuka, and all depend, more or less, upon the importation of wheat flour, crackers, dairy produce, and vegetables from New Zealand and the other Australasian colonies, supplemented with a fair local supply of beef, pork, (mutton is mostly imported), poultry, and fish, which abounds in these waters, together with a variety of tropical fruits and vegetables which grow in Fiji. While the bulk of the native population of Fiji live principally upon the products of the soil and fish, they readily adapt themselves to a European diet, and when so fortunate as to possess any money they freely spend it on soft bread, navy crackers, and preserved meats.

The people of the Fiji Islands, both natives and whites, are quite ready and willing to eat American wheat flour, provided price and quality permit. Nearly all the wheat flour and crackers imported into this colony come from

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\* Received too late for publication in Special Consular Reports, "Extension of Markets for American Flour."

New Zealand and Australia; very rarely does any come from the United States. The greater part of the flour imported into this colony is consumed by the wage-earning classes, made up of Indian coolies, Fijians, and Polynesians working in the towns and on the various plantations of the group.

Although the white population in Fiji has for some years past remained almost stationary, there has been a steady increase in the importations of flour and crackers. This can be accounted for in some measure by the low price of flour. Employers of labor in the Fiji Islands find it more convenient and almost as cheap to feed their hands on soft bread or navy crackers as on anything else, so that it has gradually come about that the Fijians, Polynesians, and Indian coolies will not go without bread, crackers, or flour, if they have the means to buy it.

For the last twelve years my importations of flour were rarely less than 5 tons per annum, nearly all of which was made into soft bread and sold to Fijians and Polynesians, chiefly.

There are no less than six bakeries in the towns of Suva and Levuka, and as many more in other parts of this group of islands.

There are three qualities of flour imported into Fiji. The first quality—patent roller flour—costs, free on board at Sydney, £7 7s. 6d. (\$35.83); freight to Suva or Levuka, £1 10s. (\$7.29); wharfage, 2s. 6d. (60 cents); total per ton of 2,000 pounds in 200-pound sacks, \$43.72. From Melbourne the same quality of flour can be generally landed here for about \$4.86 a ton less than Sydney flour. There is \$1.21 less freight per ton from Melbourne to Suva and Levuka.

Most of the flour imported into Fiji comes from Adelaide, South Australia. Its qualities for strength are superior to that coming from the other colonies, and, being drier, stands this moist, warm climate better. It costs at the present time about the same as Sydney patent roller flour. Very little is imported from New Zealand, this flour usually being \$4.86 per ton dearer than Sydney patent roller flour landed here. Freight from Auckland to Suva and Levuka is 30s. per ton.

Second quality flour, namely, stone-dressed flour, is usually \$2.43 to \$3.64 per ton cheaper than first quality in all the colonies.

Third quality flour (termed "sharps"), costs at the present time landed here in 180-pound sacks about £6 12s. per ton (\$32.07). It is most used by the Indian coolies working on the sugar estates.

The main bulk of our supplies of wheat flour is patent roller flour. The inferior grades soon deteriorate. It would not be safe to ship on consignment in large quantities during the rainy season. What is termed here the "hurricane season" commences in December and ends about April. It would be much better for American exporters of wheat flour, in opening up a trade with these islands, to send small lots and gradually feel their way. I feel assured that when once they have established a name for excellence as to strength, whiteness, and uniform quality, there will be a considerable opening for American flour in Fiji.

The usual terms of payment are by sight draft, shipping documents going through the banks. Occasionally some of our merchants get more favorable terms—thirty to sixty days after sight.

There were practically no wheat or flour imported into this colony from the United States during the years 1890, 1891, and 1892. Several odd lots were imported from time to time, but the great distance, heavy freight, and irregular communication has been against its importation.

The Huddart-Parker line of steamers, now running monthly between Sydney, N. S. W., and Victoria (Vancouver), B. C., call en route both ways at the port of Suva. These afford an opportunity for our American exporters of wheat flour to extend their trade in this direction via Victoria. I am informed that the freight is only £2 (\$10) per ton (2,000 pounds) from the latter port to Suva, being about 10s. (\$2.43) per ton more than from Sydney to Suva.

I regret that I am unable to give statistics of importations of flour for the year 1893, as requested. The Government statement of trade and navigation of this colony, usually published in the month of May or June of each year, has not yet been declared, so I am only able to give the importations for the years 1890, 1891, and 1892, and that only in a general way, for the statement of trade and navigation does not particularize the items as to quantities imported from each country separately, but only the total annual values of importations into this colony of each article from all countries. All grades of wheat flour, also what little wheat is imported, comes under the head of breadstuffs; crackers, both plain and sweet, come under the head of biscuits. The following shows the value of the importations for the years 1890-1893:

Year.	Breadstuffs.	Crackers.
1890.....	\$38,564.62	\$18,346.81
1891.....	41,631.04	22,811.48
1892.....	64,928.27	21,356.55
1893*.....	63,743.91	29,994.76

\* When just about to close this official report, the mail brought me the Government statement of trade and navigation of this colony for 1893, and I have inserted the total value of importations of wheat flour of all grades into this colony for 1893.

The little wheat that is imported and included under the heading of breadstuffs, is scarcely worth mentioning. What is imported is a low quality as food for fowls. There is a duty of 5 per cent on wheat. There is no duty on flour imported from any country, but there is a charge of 3d. (6 cents) per 200-pound sack for wharfage at this end and 2d. (4 cents) on each 50-pound bag of flour for wharfage. All flour comes in strong sacks. The same may be said in regard to wheat.

There are two banks in the town of Suva—the Union Bank of Australia (limited), and the Bank of New Zealand. In the town of Levuka there is a branch of the Bank of New Zealand. Monetary transactions with the United States are carried on through these banks by drafts on London.

So far as shipping facilities with the United States are concerned, I may say there are no sailing vessels running regularly between the United States and the Fiji Islands; once in a while a lumber vessel comes from Port Townsend.

In addition to the Huddart-Parker line from Victoria, B. C., we have also the Oceanic line of steamers running monthly from San Francisco to Auckland, from which port the Union Steamship Company, of New Zealand, runs a fortnightly service to Suva and Levuka, and are usually so timed as to bring the English and American, as well as the New Zealand, mails, passengers, and freight. The steamers of this line at present running are the *Taviune*, of 1,465 tons and 1,000 horsepower, and the *Oratau*, of 1,229 tons and 1,000 horsepower.

On the other hand, with the Australian colonies, we have a fortnightly steam service with Sydney, N. S. W. The steamers running on this line are the *Victoria*, of 1,458 tons, and the *Berksgate*, of 1,250 tons; also a monthly service with Melbourne—the steamer *Toupo*, of 737 tons and 550 horsepower, calling at the ports of Suva and Levuka.

The obstacle to an extension of market for American flour in the Fiji Islands is the close proximity of the great wheat and flour producing countries of Australasia, whose abundant harvests have made the price of wheat flour very low for several years past. This, together with more frequent communication and cheaper rates of freight as compared with the shipping facilities from the United States, seems to me to be the only difficulty in the way. But if the prices of flour are so much lower in the United States as to make up for the extra freight and allow of cutting under the prices of Australian wheat flour, the quality being equal to their best patent roller flour, the way is clear, but it is advisable in shipping on consignment to feel the market gradually, sending small lots until it has established a name for its excellence. Under such conditions, there is no doubt but that American exporters of flour would, in time, command a fair share of the flour trade of this colony.

BENJAMIN MORRIS,  
*Vice-Commercial Agent.*

LEVUKA, *July 27, 1894.*

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## BANKING SYSTEM OF GERMANY.

A study of the German banking system offers several opportunities for profitable comparison with the system of the United States. It is true that the immense American system of exchanges and clearing houses is hardly represented in Germany, but this is due to the public, which has found, or inherited, other methods of effecting such transactions; and, perhaps, also, to a greater extent, to the smaller territory over which the system extends, which allows of a rapid interchange of letters. The safety of German bank-

ing methods, the absence of panics and crises, the rarity of failures—which are almost always brought about by illegal speculation with the funds of depositors—show that, in certain respects, the system is a safe one.

It may be said in general, that bank charges are as cheap in Germany as in the United States, and that directors exercise the greatest watchfulness, absolute security being demanded in the case of overdrafts, discounting bills, etc.

The head of the banking system in Germany is the Reichsbank (Imperial Bank) with headquarters in Berlin, and represented by branches in two hundred and sixty places.

The Reichsbank is a private institution, but under Government supervision. The officials are appointed by the State, and the first director is always the Chancellor of the Empire. It is said not to exercise any influence upon the politics of the country.

Besides the Reichsbank, there are other banks of issue, viz, Badische Bank, Bank für Süddeutschland, Baierische Notenbank, Frankfurter Bank, Sächsische Bank zu Dresden, Städtische Bank zu Breslau, and Württembergische Notenbank. The notes of these banks are accepted for payment by the branches of the Reichsbank, in all cities of more than 80,000 inhabitants. The note circulation thus provided answers the needs of the country, and is practically independent of the state of trade. The growing tendency is to make use of drafts and bills of exchange, thus relieving any necessity for great increase in note circulation.

The average quotations for German consols (*Deutsche Reichs Anleihe*) were as follows:

Year.	4 per cents.	3½ per cents.	3 per cents.
1888.....	107.94	102.48	.....
1889.....	103.16	103.69	.....
1890.....	106.74	100.42	.....
1891.....	105.99	98.38	85.10
1892.....	106.89	99.97	86.27

*Capital, reserve, and note circulation of the nine principal banks of Germany in 1892.*

Banks.	Capital.		Reserve fund.	
	Marks.*		Marks.*	
Reichsbank.....	120,000,000	\$28,560,000	29,792,000	\$7,090,496
Städtische Bank zu Breslau.....	3,000,000	714,000	600,000	142,800
Frankfurter Bank.....	17,822,000	4,241,636	4,455,000	1,060,290
Baierische Notenbank.....	7,500,000	1,785,000	1,603,000	381,514
Sächsische Bank zu Dresden.....	30,000,000	7,140,000	4,427,000	1,053,626
Württembergische Notenbank.....	9,000,000	2,142,000	711,000	169,218
Badische Bank.....	9,000,000	2,142,000	1,617,000	384,846
Bank für Süddeutschland.....	15,672,000	3,729,936	1,786,000	425,068
Braunschweigische Bank.....	10,500,000	2,499,000	599,000	142,562
Total.....	222,494,000	52,953,572	45,590,000	10,850,420

*Capital, reserve, and note circulation of the nine principal banks, etc.—Continued.*

Banks.	Note circulation.	
	Marks.*	
Reichsbank.....	1,017,027,000	\$242,052,436
Städtische Bank zu Breslau.....	1,935,000	460,530
Frankfurter Bank.....	11,892,000	2,830,896
Baierische Notenbank.....	62,954,000	14,983,052
Sächsische Bank zu Dresden.....	46,837,000	11,147,206
Württembergische Notenbank.....	23,515,000	5,596,570
Badische Bank.....	14,082,000	3,351,516
Bank für Süddeutschland.....	13,149,000	3,129,462
Braunschweigische Bank.....	2,628,000	625,464
Total.....	1,194,019,000	284,176,522

\* 1 mark = 23 8 cents.

The shares of the Reichsbank number 40,000, of which 29,612 are held by 6,130 Germans, and 10,388 by 1,696 foreigners.

The Reichsbank enjoys the privilege of establishing branches all over Germany. It is now represented in two hundred and sixty places, has a capital of 120,000,000 marks (\$28,560,000) in 40,000 shares at 3,000 marks (\$714) each. The issue of notes is unlimited by any specific provision, but subject to the control of the Government debt commission. The board of directors consists of the Imperial Chancellor as president, and four members, one of whom is appointed by the Emperor and three by the Bundesrath, their terms of office lasting for life. The shareholders are represented by fifteen delegates and as many emergency men, who meet once every month, when all matters of importance are placed before them by the board. Election of officials and yearly balances are under their supervision. Three of these delegates attend, with the right to vote, at the meetings of the Government board. The yearly profit of the bank is divided in the following manner: Shareholders receive, first of all, a dividend of  $4\frac{1}{2}$  per cent; of the remainder, 20 per cent is placed in the reserve fund until it amounts to one-fourth of the entire capital. The still remaining surplus is equally divided between the *Reichscasse* and the shareholders, until the total dividend of the latter amounts to 8 per cent. Should there still be money available, the shareholders receive one-fourth and the *Reichscasse* three-fourths. In case of unfavorable results, the  $4\frac{1}{2}$  per cent dividend to the shareholders is made up from the reserve fund.

Government business has to be transacted by the bank free of charge, and payments are made up to the amount of the Government fund. The Reichsbank is ordered by law to keep assets equal to its note circulation, viz, one-third in gold and two-thirds in secure bills of not over ninety days' duration. Every firm, business man, landowner, etc., of good reputation is admitted to business with the bank, according to certain regulations and provisions. Before any transactions, however, the applicant has to file an accurate statement of his financial affairs with the bank management. Joint-stock companies and other associations have to make a statement of the

capital and reserve funds, produce copies of statutes, last balance sheets, and lists of shareholders. Foreign firms are excluded from doing business with the bank.

The bank buys or discounts bills indorsed by at least two reliable persons, and payable before the end of three months. The amount of the discount charged varies, and depends upon the general state of the money market; the present rate is 3 per cent. The bank also buys bills of not less than 2,000 marks (\$476), which have yet to run six weeks, at the so-called "Privat-discount," which averages about one per cent less than the ordinary discount. Various blank forms, properly filled out, according to the bank regulations, have to be handed over with the bills. The month is calculated at thirty days. The bank charges at least 30 pfennigs (7.14 cents) for bills up to 100 marks, and 50 pfennigs (11.9 cents) for over 100 marks. Every bill is subject to the stamp duty as follows:

Amount.	Stamp duty.	
	<i>Pfennigs.</i>	<i>Cents.</i>
100 to 200 marks.....	10	2.38
200 to 400 marks.....	20	4.76
400 to 600 marks.....	30	7.14
600 to 800 marks.....	40	9.52
800 to 1,000 marks.....	50	11.90
Every additional 1,000 marks.....	50	11.90

The bank is not obliged to give any explanation in case of refusing bills.

Anyone opening an account with the bank receives an account book in which all transactions are entered. Cash, checks, bills, and mortgages are placed to the credit of the depositor. White check forms are used for drawing, and red forms for transmitting amounts to other places. White checks are transferable; red checks are not. Checks are free of stamp duty. Check books, containing fifty checks, are given to the customer free of charge. Responsibility for these books rests with the customer. If a customer draws on a bank in excess of his funds, the latter refuses payment, and has the right to exclude the former from doing further business. If he draws to the exact amount of his funds, the bank sees in his action a desire to close his account. No interest is paid by the bank for deposits subject to drafts. Account balances take place twice a year—on the 7th of July and 31st of December. A fixed amount for each depositor must always remain as a standing fund. The bank has the right to close the account of a customer without explanation, should the connection prove unsatisfactory.

The bank undertakes the purchase or sale of stocks, bonds, etc., in behalf of its customers. In the former case, the necessary money or good security has to be deposited before any transaction takes place. Sales are carried out after a careful and satisfactory examination. On commission, the bank charges one-sixth of one per cent for sale or purchase on nominal value of the stocks—at least 50 pfennigs (11.9 cents) for each class; however, cus-



tomers who keep their stocks always in charge of the bank pay one-eighth of one per cent; besides this, one-half per mille brokerage is charged. All postage and other expenses fall upon the customer.

The bank further advances money on stocks, bonds, coined, and uncoined metal; produces bills on behalf of their customers for indorsement, or payment when due, at a moderate charge.

It further permits these customers to draw on the bank without having an account, in which case the former must pay the draft promptly when due. The sale and purchase also form part of the banking business.

Since the 2d of April, 1883, there has existed in Berlin a banking institution called "Abrechnungsstelle," which works on principles similar to the clearing-house system. It has been created for the purpose of assisting the development of the check system, and it affords greater facilities to the banks which care to avail themselves of its support. Similar institutions are in operation at Frankfort, Bremen, Cologne, Dresden, Elberfeld, Hamburg, Leipsic, Stuttgart, and Breslau.

FREDERICK OPP,

*Consul.*

BRESLAU, *November 3, 1894.*

## MANUFACTURE OF ANTIDIPHThERITIC SERUM.\*

In view of the general interest which now attaches to the use of antidiphtheritic serum, or antitoxine as a specific for diphtheria, I have prepared and respectfully submit herewith a report describing the manufacture of that material at Hoechst-on-Main, near Frankfort, which is the only place at which it has yet been produced commercially and in quantities adequate to meet the rapidly increasing demand. It is announced that this subject is about to engage the attention of Congress, and for this reason and because a great number of American physicians have visited Hoechst to examine the process of manufacture, or have written for detailed information concerning it, it is respectfully suggested that the inclosed report, if found acceptable, would derive additional value and interest from being published at the earliest convenience of the Department.

The discovery of antitoxine as a new agent for the prevention and cure of diphtheria, was announced by Prof. Dr. Emil Behring, of Halle, about four years ago. Although received at first with more or less incredulity, the new remedy has borne successfully the test of actual use by a number of eminent practitioners in Germany and other countries, several of whom presented reports embodying their experiences and conclusions at the recent International Medical Conference in Budapest, and it is now recognized by

\*A report by Charles W. Chancellor, consul of the United States at Havre, France, dated October 14, 1894, upon the new remedy for diphtheria, was published by the Department of State in a special pamphlet entitled "Inoculation for Diphtheria and Croup." As the antidiphtheritic serum has now become an article of commerce, the report of Consul-General Mason upon its manufacture and sale is printed in **CONSULAR REPORTS**.

high authorities as one of the most beneficent and interesting discoveries in modern pathology. It has been applied in Paris by Dr. Roux and his associates, with the declared result of reducing the diphtheritic death rate from 50 per cent to 14 per cent, and for this service Dr. Roux has been publicly thanked by the President of the Republic.

Since the publication of Dr. Behring's treatise on the subject, no secret or mystery has surrounded the nature of antitoxine or the conditions of its use so far as these had been then demonstrated, but for the reason that its manufacture is difficult and expensive, involving tedious preparation of materials, scrupulous care, and the use of complicated apparatus, the production of the new remedy has, until quite recently, fallen far short of meeting the constantly growing demand, which, especially since the conference at Budapest, has come with increasing insistence from every civilized country where diphtheria is recognized as one of the most fatal and persistent scourges of the human race.

Through the employment of a liberal endowment raised by popular subscription at Paris, antitoxine has been made there for the supply of the local hospitals, and measurably for the use of practicing physicians throughout the city and immediate vicinity; a small quantity has been produced at Berlin, and establishments for its manufacture are in construction at Milan and Budapest, but the only place in Europe where it has been and is now manufactured commercially and in quantities at all commensurate with the demand, is at the *Farbwerke*, in Hoechst-on-Main, near Frankfort, one of the oldest and most important of the manufacturing laboratories which have given to the aniline and chemical industry of Germany its acknowledged preeminence.

It is now about eighteen months since the *Farbwerke* took up the process of Dr. Behring and began the manufacture of antitoxine under the direction of a skilled bacteriologist designated by the inventor. The material at first used was the blood of sheep and goats, but for the reason that those animals in grazing are liable to eat plants which may effect temporarily the quality of their tissues, recourse was had to horses, which are now exclusively employed to furnish the blood serum in which the antitoxine is developed and contained. From a small installation, the antitoxine department has become an important branch of the vast establishment, in which the blood of seventy-six horses is utilized by a corps of chemists, veterinaries, and various operatives, numbering more than fifty men. During the month of September last, the entire product of the laboratory could not be made to exceed 3,500 doses of antitoxine, and many hundreds of urgent orders which came by mail and telegraph from far and near had to be refused, but the works were rapidly enlarged, so that during November 50,000 doses were delivered. There are now produced about 2,000 doses per day, and by the end of January it is expected that the establishment at Hoechst will be able to supply any demand which the rapidly extending use of the remedy may develop.

A description of this interesting manufacture involves necessarily some account of the nature of antitoxine, and the principle upon which its prophy-

lactic action depends. Dr. Behring found that when an animal which is by nature susceptible to diphtheria is inoculated repeatedly with gradually increased doses of diphtheria poison, or living bacilli, it becomes finally "immune" to (proof against) the poison of that disease, and there is developed in the tissues of the animal so treated an antitoxic principle which has the power to neutralize and render innocuous the poison which is secreted by the true diphtheria bacillus, as demonstrated in 1884 by Loeffler, which poisonous secretion, as is well known, forms the source of danger in diphtheria.

The neutralizing agent thus created was named "antitoxine," and is the specific which forms the basis of the new treatment of diphtheritic disease, both as a preventive and as a remedy in cases that have become actually developed. Precisely what this antitoxic agent is, has not been demonstrated. Chemistry has not separated and defined its constituent elements, but its action is perfectly understood and is analogous to that of hydrated oxide of iron when used as an antidote for arsenical poisoning. In the presence of arsenic, the oxide unites with the poison and forms a combination which is not poisonous. In a similar manner, the antitoxine attacks and neutralizes the poison secreted by the bacillus of diphtheria, and this, so far as experience has shown, without immediate or subsequent injury to the tissues or prejudice to any of the functions of human life.

Antitoxine may be obtained in a highly concentrated form by either of two methods—(1) through precipitation from the serum solution by means of sulphate of ammonia or hydroxide of aluminium, in which case the resulting precipitates are extracted with alkaline solutions and evaporated in vacuo at low temperatures; or, (2) the original solution may be directly evaporated to dryness, leaving the dessicated antitoxine as a residue.

The essential conditions in the preparation of diphtheria antitoxine are absolutely pure and healthy animal serum, thorough knowledge of bacteriological processes, large resources and absolute cleanliness and care at every stage of the operation. The horse is one of the most susceptible of animals to diphtheria, and being not only tractable and easily kept under the requisite conditions, but capable of supplying a large quantity of blood, is best suited for the purpose. The horses now in service at Hoechst were chosen with every precaution, the requisites being youth, vigor, and perfect physical health. No stud of hunters or racing thoroughbreds were ever housed, fed, watered, exercised, and cared for more scrupulously than these chosen animals, which give their blood for the healing of human kind. The stables are under the supervision of an experienced veterinary surgeon, and when a new horse is introduced he is kept for a certain period under close observation to detect any symptom, however slight, of antecedent injury or disease. If no such defect is discovered, he is put on the active list, his stall is numbered, and a special book is opened for each animal, in which every detail of his daily treatment and condition is carefully recorded. He is first inoculated high up on the shoulder, with a small or weakened dose of diphtheria

poison or living bacilli. Thenceforth his temperature is frequently taken, his appetite, general aspect, condition of the wound made by the hypodermic syringe, etc., are minutely observed and recorded. After a proper interval, the inoculation is repeated, and thence continued in gradually increased doses until the horse becomes immune to the poison of diphtheria. Every tissue of the animal's body now contains antitoxine, but the blood is the substance which can be most readily withdrawn without danger to life and health, and the blood alone is used.

It is important to ascertain definitely when the treatment of each animal has been sufficiently continued to render it immune and fully develop the antitoxine in its tissues. This is done by drawing a small quantity of its blood, separating the serum, and mixing a measured bulk of this with a specified quantity of the diphtheria poison such as is otherwise used for inoculation. With this mixture a test animal—usually a rabbit or guinea pig—is inoculated, and the result observed. If the test animal becomes ill or dies from diphtheria, it is proven that the antitoxine in the horse's blood was not sufficiently developed to neutralize the requisite volume of poison, and the inoculatory treatment is therefore resumed. But if the test animal shows no ill effects, the potency of the serum is thereby established and the horse is ready to become a producer of antitoxine.

The amount of blood which a strong, healthy horse can supply without apparent injury to its physical condition is somewhat surprising. The record books at Hoechst show that from one of the horses 10 liters (21.13 pints) of blood have been drawn within two days; another has yielded 21 liters in eight days, and the average for each animal varies from 25 to 50 liters per month. All have at present the appearance of good health, and some have even grown fat under the ordeal. Dr. Behring, who has drawn blood from the same horse for nearly four years, states that it is still in good physical condition. The blood thus obtained passes to the laboratory, where the serum is eliminated, exposed to a degree of heat which destroys that last vestige of any form of bacillus that it may contain, and is then purified and prepared for commerce by processes, a description of which would extend unduly the limits of this report. As a final precaution against the survival of any bacillus, and to avert danger of decomposition from bacterial growth, 5 per cent of carbolic acid is added to the antitoxine serum, and in this condition it may be kept in a cool place, with exclusion of light, for months without sensible change or loss of antitoxic power.

Horses vary individually in respect to the strength of the antitoxic serum that they produce, and the finished product is prepared in three degrees of strength, numbered, respectively, 1, 2, and 3, which are indicated by different colored labels on the vials in which it is sold for use. In the use of antitoxine, either as a prophylactic or remedy, the strength of the serum employed is a point of importance to the physician, who should know precisely the antitoxic energy of the dose administered. It was therefore essential to formulate a system of measurement for this energy, based upon a definite and

invariable unit. This has been accomplished, mainly through the labors of Drs. Behring and Ehrlich, as follows: The bacilli of diphtheria are propagated and preserved in ordinary culture bouillon. The amount of such poison that a given measure of bouillon will contain is fixed and definite, like the limit of saturation in many saline and other solutions. The deadliness of this maximum solution of diphtheria poison may be inferred from the fact that one-fourth of a cubic centimeter of it, administered hypodermically, will kill a guinea pig of 250 grams' weight. The relative strength of this normal bouillon toxine and the antitoxine is as 1 to 10—that is to say, one measure of antitoxine will neutralize ten measures of *Normalgift*, which is the German name for diphtheria bouillon of standard strength, and the energy contained in one cubic centimeter (one-thirtieth of a fluid ounce) of such antitoxine forms the unit of measurement of antitoxic power. But some horses yield far more powerful serum than others, and a serum may be produced so powerful that one-tenth of a cubic centimeter of it will neutralize 10 cubic centimeters of poison. One cubic centimeter of such a serum would thus contain ten units of antitoxic power, and would be designated as "tenfold serum." The strongest serum yet produced is one hundred and forty fold, one measure of which neutralizes 1,400 measures of the normal toxic solution.

The finished antitoxine is a clear, amber-colored fluid, soluble in water, and is put up for use in strong, carefully closed, sealed, and labeled vials, having a uniform capacity of 10 cubic centimeters, or one-third of a fluid ounce. The exact bulk of serum in each vial is regulated according to its number and strength, as follows: Antitoxine No. 1 (green label) contains 600 units of antitoxic energy, and is used in mild cases and for young children, or as a preventive to inoculate children or adults who have been exposed to the infection of diphtheria, but are not yet visibly attacked. The prophylactic power of antitoxine is estimated at ten times its curative virtue, so that a subcutaneous injection of one cubic centimeter of serum No. 1 is generally regarded as sufficient to avert diphtheria, and this immunity is believed to continue for a period of at least two months.

Antitoxine No. 2 (white label) contains 1,000 antitoxic units, and is used for older patients and where treatment has not been commenced until the attack is fully developed.

Antitoxine No. 3 (red label) contains 1,500 units of strength, and is employed for severe cases, where malignant symptoms prevail, and treatment has not begun until the disease has reached a critical stage.

It is more than probable that, with further experience, the importance of the highest of these three grades of serum will be greatly diminished, and that instead of one injection of highly concentrated antitoxine, repeated doses of the weaker grade will be preferred. The principle has been fully established that the requisite number of antitoxic units can be supplied, even in severe cases, by simply repeating the injection of serum No. 1—in other words, it is quantity, not quality, of strength that is required—and Professor

Behring is of opinion that, ultimately, only one serum of standard and uniform strength will be used.

It has also been found that age has an important salutary effect upon antitoxine. In the earlier experiments, when the supply of antitoxine was small and temporary, freshly prepared serum was mainly used, and produced in some cases a slight eruption on the skin. This was the outward sign of a disturbance, the ultimate consequences of which caused some anxiety, but later experience has shown that this eruption is not caused when serum which has ripened a few weeks is used. Instead of degenerating, therefore, antitoxine improves with age, at least during the first two months, and the best German practitioners no longer use freshly-prepared antitoxine when that which has undergone the ripening process can be obtained.

All authorities agree that an early application of the remedy is of the utmost importance. At the Lazarus Hospital, in Berlin, where seventy-two cases of diphtheria in children were treated within two days of first appearance, only two cases were fatal, and Dr. Kossel estimates that under such favorable conditions the death rate can be securely reduced to 4 per cent. It follows from the nature of antitoxine that it can have no curative effect in cases of any disease other than true diphtheria, such as are caused by the Loeffler bacillus, and no exact and conclusive statistics can be prepared until such cases are carefully distinguished from scarlatina and the other kindred diseases, in which the real diphtheria bacillus is not present.

Only the careful experience of years by a large number of physicians can settle definitely all the questions that have been raised by the introduction of antitoxine, establish its precise value as a preventive and remedy, and determine finally whether its use, when properly prepared and administered, entails any danger of injurious effects upon the patient. What is now known, although inconclusive from a strictly scientific standpoint, is certainly most important.

In Paris, as has been already stated on the authority of Dr. Roux, its use has reduced the diphtheritic death rate from 50 per cent of cases attacked, to 14 per cent. The deaths from diphtheria in Paris during October, 1890, numbered 125; in the same month of 1892 they numbered 134, while in October, 1894, during which month antitoxine was extensively employed, the deaths from that disease numbered only 23. In Germany, diphtheria has been hitherto regarded as one of the most deadly and irresistible of diseases, the fatal cases ranging in some years as high as 60 per cent. Not less than fifty thousand lives have been annually sacrificed to this scourge in this country, and it is now believed, from the experience already gained, that this frightful tribute can be reduced to less than one-fourth of its present proportions when the use of antitoxine shall become general throughout the Empire, and physicians in rural districts as well as those in cities are skilled in its application. For the first time in several years, the weekly reports of vital statistics, which are sent from this consulate to Washington, showed

during two consecutive weeks during the past October and November no record of any death from diphtheria in Frankfort.

It is reported that a serious epidemic of diphtheria, which broke out recently at Trieste, has been practically mastered by the use of the new remedy. Facts so tangible as these may not be wholly conclusive, but they are assuredly significant and encouraging.

FRANK H. MASON,  
*Consul-General.*

FRANKFORT, *December 24, 1894.*

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## THE GAS-MOTOR STREET CAR IN SERVICE.

In two previous reports of this series\* some account was given of a new method of propulsion for street and suburban railway cars, by means of a gas engine, as first applied and put in operation at Dresden, and subsequently introduced experimentally into Great Britain. The earliest models of this car were unduly heavy, complicated, and expensive; but it has since been improved and simplified to a point of economy and efficiency which it is now thought may fairly challenge expert criticism. At the beginning of August last, four cars of the latest and most improved type were put into regular service upon a suburban railway leading from Dresden along a busy boulevard to the village of Wilden Mann, a distance of nearly 3 miles. These cars have since been in daily service from 6 o'clock in the morning until 10 at night, working side by side over part of the line with horse cars, with which the road was originally equipped, so that a close temporary comparison is offered between the two systems, operated under identical conditions.

With the exception of some slight modifications, designed to minimize the oscillation of the vehicle at the moment of starting or when at rest with the engine in motion, these cars are of the same general type as the one described in the last previous report as being in experimental service at Croydon, in England.

Outwardly, the car's appearance is precisely similar to that of an ordinary double-decked horse car, having stairways from each platform to the seats on the roof. All the machinery is inclosed and concealed from sight; there is no smell of gas, no noticeable heat from the engine, and no undue noise or jar when the car is stopped or set in motion. The motor is a double-cylindereed gas engine of the Otto model, placed under the seat at one side of the car, and reached for purposes of oiling, cleaning, or repairs by doors which form panels in the outer wall of the car, and when closed are not noticeable. The engine is of the latest type, in which the gas is ignited at each stroke by an electric spark from a small battery located in the engine space, so that the car is put into or out of service by turning a knob which opens or closes the circuit.

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\*See CONSULAR REPORTS No. 163 (April, 1894), pp. 695-699, and No. 167 (August, 1894), pp. 633-636.

The engine is kept in motion while the car is in service, and the whole is managed by the driver, who, standing on the front platform, has within reach the brake wheel, on which is fixed the alarm bell and a movable lever which, when in an upright position, leaves the engine disconnected with the running gear of the car and cuts off the gas supply so that but one explosion takes place in one of the cylinders at each eighth revolution, the motion of the engine being meanwhile maintained and steadied by the fly wheel, which is 4 feet in diameter and of corresponding weight. When the lever is pushed to the left, it turns on a two-thirds supply of gas in both cylinders and brings into engagement a friction clutch which connects the engine shaft with the wheel axles and gives the car a speed of  $4\frac{1}{2}$  miles per hour. Pushing this lever to the right turns on the full gas supply and brings into connection a friction clutch of larger diameter, which gives the car a speed of 9 miles per hour. A second lever is provided for reversing the engine and direction of movement.

The gas supply is carried in three cylindrical reservoirs of boiler iron about 10 inches in diameter, two of which are hung transversely under the floor at each end of the car, while the third is placed beneath the seat at the side opposite the engine. The weight is thus to some degree equalized. The three reservoirs weigh, together, about 550 pounds, and contain 33.5 cubic feet of gas, condensed to a pressure of 8 atmospheres by means of an ordinary force pump at the end supply station. This pump is worked by a gas engine of 8 horsepower. The whole apparatus costs, in Germany, \$2,380.

A fourth cylindrical reservoir, containing water for cooling the engine cylinders, is placed beneath the double seat along the middle of the deck roof, whence the cool water descends and the warm ascends automatically through concealed copper tubes, so effectively that the water, being continually cooled in the exposed reservoir, is used over and over again, and keeps the cylinders down to the requisite temperature. The gas reservoirs are filled at the end station by means of a flexible hose, leading from the condenser, and the filling process occupies from 30 seconds to a minute, according to the caliber of the hose and the degree to which the gas in the reservoirs has been previously exhausted.

The ordinary car is equipped with a gas engine of 9 horsepower and carries thirty-six passengers, viz, fourteen seated inside, and twelve on deck, with platform standing room for ten more. The car costs, in Germany, 12,000 marks (\$2,856). When it is desirable to make the motor car capable of drawing a trailer during hours or days of increased travel, the engine is increased to 12 horsepower, and the car then costs, complete, \$3,094. The work of the new motor cars, which have now been in service at Dresden during a period of three months, seems to have fulfilled substantially all that has been claimed in their favor. The car is perfectly manageable, stops from full speed within its own length, starts without noise or shock, is free from heat or smell, runs as smoothly as a horse car on what would be considered in America a rather rough and poorly constructed track, far sur-



passes a horse car in speed when the way is clear, and is handled safely and easily on a boulevard which, at certain hours, is crowded with traffic that renders frequent and sudden stops necessary. At the slower rate of speed, it mounts a grade of 1 in 22, and traverses, uphill, a curve of 40 feet radius.

Exact and conclusive comparisons of net cost and operating expenses, as compared with other systems of propulsion, can, of course, be deduced only from prolonged and continuous service covering a period of years, but from the experience thus far gained, some of the essential factors of the problem may be closely approximated. Gas is furnished by the street gas company in Dresden at its usual rate, 3 cents per cubic meter, or about \$1.05 per 1,000 cubic feet. At this price, the cost for gas consumed by a car in service is one cent per car kilometer ( $1\frac{1}{3}$  cents per car mile). The initial cost of a gas motor car does not differ much from that of a new horse car with its complement of horses. The gas reservoir station for a large line occupies but small space, and can be managed by one or two men, and the cars, when not in service, consume nothing and only require a shed for shelter from the weather. One cleaning per week is found to be sufficient for the machinery, which is tightly inclosed and protected from dust and dampness.

In Germany, good horses for tramway service cost from \$200 to \$250 each, and their average efficiency does not exceed three years, at the end of which time they are either worn out, or, if salable for breeding purposes or farm work, they bring only from one-fourth to one-half of their original cost. In Dresden, the annual depreciation of street-railway horses from all causes—disease, accident, and inevitable wear from hard service in all weathers on hard pavements—is reckoned at from 18 to 22 per cent of their value, and this percentage is said to be still higher in tropical or very cold countries, where only inferior breeds of draft horses are available and the conditions of animal life are less favorable.

The cost of keeping a gas motor car in repair, although not yet fully demonstrated for a long period, is estimated at not more than 5 per cent annually of its original cost, and with ordinary care such a car should last as long as two or three outfits of horses, which latter are, moreover, subject to epidemics and to conscription, in case of sudden war, for military service. So far, therefore, as experience has yet demonstrated, the mechanical efficiency of the gas-motor car would seem to be assured; and a comparison of its cost of construction and operation with the known expense of working horse, cable, steam, and electrical tramways in the United States can hardly fail to invest the new motor, as a competitor in the same field, with a serious practical interest. Further improvements will, no doubt, still better adapt it to its work under varying local conditions, but in its present form, it would not seem to be well suited to lines which have grades more abrupt than 1 in 20, and it has not yet been proven to be well adapted to countries which are subject to frequent and heavy falls of snow.

## A NEW CAR FOR THE UNITED STATES.

In the latter of the two previous reports on this subject, it was stated that a gas-motor car of the most improved type was then under construction in England, and would be sent to the United States for trial and exhibition in October. In order to adapt the invention more fully to the peculiar requirements of our country, a second and entirely new model has been invented, with the result that the contemplated exhibition in the United States has been unavoidably postponed until some time in February.

The fact has been taken into account that in a country where sudden and frequent snow falls occur in winter, a motor of higher power is requisite, and that in order to meet more fully the wants of American tramway companies, the machine must be so modified as to be readily applied to cable, electrical, and horse cars already in use, thereby economizing all but the running gear of such vehicles. The following modifications have therefore been made in the Dresden model as above described: The motor has been condensed in compass so as to be readily set upon a four-wheeled truck, wholly independent of the upper portion of the car. The fly wheel and driving machinery are laid in a horizontal position between the wheels, and two sets of springs are provided, those supporting the machinery resting directly on the axles, and those supporting the car body bearing on the truck frame, the two sets of springs being entirely independent of each other. By this clever device, the vibration caused by the engine at the moment of starting is reduced to a minimum, and the whole apparatus so simplified that when the body of any ordinary street car is bolted to the springs and the cool-water reservoir and its connecting pipes are attached, the car is ready for service. The motor has been increased from 8 to 20 horsepower, and its maximum speed, with the larger friction clutch in engagement, to 12 miles an hour.

Thus, within less than a single year after having first been put in operation, the Lübrig gas-motor car has been so modified and improved as to constitute a practically new machine, in which all the mechanical and economic difficulties which were at first encountered, seem to have been successfully overcome.

FRANK H. MASON,  
*Consul-General.*

FRANKFORT, *November 30, 1894.*

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WAGES IN LUXEMBURG.

As of possible interest, I have the honor to hand you herewith a statistical report relative to the wages of workmen employed in the steel works, rolling mills, and blast furnaces of the Grand Duchy of Luxemburg.

After carefully studying the subject, I find that the standard of wages is almost the same in Luxemburg as in Germany. Generally speaking, the average earnings of ordinary workmen amount to less than \$200 per annum;

women earn about half as much as men. The average wages of miners and foundry hands is less than \$1 a day. The average annual salaries of primary school teachers are \$224 for males and \$179 for females. A very large majority of the officials and employees of the Government earn less than \$400 each per annum.

On the other hand, still speaking generally, the necessities of life cost as much in central Europe as they do in the United States. A workingman's expenditures for clothing and rent may, possibly, be somewhat less here than in the United States; but in the town of Luxemburg, coal costs \$7 per ton; eggs, 21 cents per dozen; rye flour, 3 cents per pound; wheat flour, 5 cents per pound; sugar, 8 cents per pound; butter, 25 cents per pound; beef, 19 cents per pound; veal and mutton, 16 to 20 cents per pound; fresh pork, 20 cents per pound; and smoked pork, 23 cents per pound.

Naturally, in studying the material condition of the working classes of any country, their receipts and expenses are not the only factors which deserve consideration; but, undoubtedly, they are very important factors, and wherever, as here, the relation between wages and the cost of living is unfavorable, frugality and industry can hardly be expected to accomplish any miracle greater than that of enabling a thrifty workman to keep out of debt.

This distressing state of affairs is partly, no doubt, an unavoidable result of the competitive demand for employment which must exist in every densely populated country. But the misery of the European poor has been very much aggravated by that popular craze which causes the large cities and towns of Germany to grow with a rapidity as phenomenal as that which is doubling and tripling the population of our own Western cities. An important point of difference, however, lies in the fact that foreign immigration largely accounts for the development of our towns, whereas German cities expand almost entirely at the expense of the rural districts. In central Europe, every ambitious breadwinner turns his eyes and feet toward the city. Consequently in every great city the labor market is glutted, the natural result being that wages of labor keep falling. This evil is enhanced by the ever-increasing employment of labor-saving machinery. Moreover, with the growth of manufacturing, the competition between the manufacturers themselves in the markets where they dispose of their products becomes more and more intense and results in a further decline of prices. As a consequence, manufacturers, in order to avoid loss, are compelled to reduce costs of production, and this is most conveniently effected either by reducing the wages of employees or by introducing more labor-saving machinery.

By imprudently flocking into the great cities, the workingmen of central Europe have placed themselves and families in a position of utter dependence upon huge factories, whose owners, in order to compete successfully with the owners of other huge factories, are compelled to pay to those workmen who are fortunate enough to find employment wages which barely suffice to secure for their families the absolute necessities of life.

The policy of the countries of central Europe seems to be to extend and inflate their manufacturing industries indefinitely. Their idea of national prosperity and happiness seems to be nothing more than the attainment of the ability to export manufactures and to import food. In support of this policy, in many cases, the governments of different central European states take from the workingman an import duty on his food in order to give to the manufacturer an export bounty.

The much-talked-of disarmament of Europe will, if it ever be realized, bring further calamity to the working classes, for it will bring into the labor markets millions of young men who have been unfitted for country life by several years' residence in city barracks.

The European pinch has not yet reached our American working classes, for our home market is large and our manufacturers have not yet won undisputed control of it. The development of our manufactories is undoubtedly of great importance; but American workingmen and working women have good reason to favor the restriction of immigration, and to view with apprehension a tendency to inflate our manufacturing industries beyond safe limits.

History shows that national prosperity is dependent upon the preservation of a healthy equilibrium between the agricultural and manufacturing interests of a country.

*Wages of employees of the steel works, rolling mills, and blast furnaces of the Grand Duchy of Luxemburg in 1893.*

Description.	Wages.	Description.	Wages.
<i>Steel works.</i>		<i>Steel works—Continued.</i>	
Foremen.....per month...	\$60.00 to \$70.00	Tilters.....per day...	\$0.52
Assistant foremen.....per day...	1.18	All other employees.....do.....	\$0.60 to .80
Converter hands:		<i>Rolling mills.</i>	
First.....do.....	1.07	Foremen.....per month...	50.00
Second.....do.....	.81	Rollers:	
Third.....do.....	.73	Master.....per day...	1.88
Founders:		First.....do.....	1.46
First.....do.....	1.18	Second.....do.....	1.06
Second.....do.....	.84	Assistant.....do.....	.82
Third.....do.....	.76	Machinists.....do.....	.35 to 1.00
Basin hands:		Lubricator.....do.....	.40
First.....do.....	1.02	Laborers.....do.....	.45 to .53
Second.....do.....	.83	Overseers.....per month...	24.00
Third.....do.....	.75	All other employees.....per day...	.35 to 1.88
Fourth.....do.....	.70	<i>Blast furnaces.</i>	
Converter machinists:		Overseers.....per month...	20.00 to 25.00
First.....do.....	1.03	Founders:	
Second.....do.....	.82	Chief.....per day...	1.00 to 1.40
Third (boys).....do.....	.45	First.....do.....	1.00
Ladlers.....do.....	.84	Second.....do.....	.76
Weighers.....per month...	18.00	Third.....do.....	.69
Smiths.....per day...	.70	Polishers.....do.....	.69
Masons.....do.....	.90 to .95	Crane hands.....do.....	.55
Ingot cleaners.....do.....	.52	Machinists.....do.....	.55 to .75
Boys.....do.....	.20 to .50	Masons.....do.....	.65
Machinists.....do.....	.65 to .80	Laborers.....do.....	.50
Lubricators.....do.....	.60	All other employees.....do.....	.52 to .70
Overseers.....do.....	.75 to 1.00		
Cupola hands.....per day...	.60		

The number of persons employed in the iron mines of the Grand Duchy of Luxemburg has gradually increased from 1,824 in 1869 to 4,054 in 1893. The following table shows the average daily wages of these workmen:

Year.	Laborers employed in removing earth and rubbish.	Surface miners.*	Gallery workmen.		Sorters.	Rail lay-ers.	Smiths and wheel-wrights.
			Miners.	Drivers.			
1871.....	\$0.54	\$0.64			\$0.60	\$0.60	\$0.75
1872.....	.56	.64			.60	.60	.75
1873.....	.58	.66			.60	.60	.75
1874.....	.62	.68	\$1.10	\$0.80	.64	.65	.75
1875.....	.64	.70	1.10	.80	.64	.65	.75
1876.....	.65	.70	1.10	.80	.65	.65	.75
1877.....	.65	.70	1.04	.80	.65	.65	.80
1878.....	.65	.70	1.04	.80	.65	.65	.80
1879.....	.65	.72	1.04	.80	.65	.65	.80
1880.....	.65	.72	1.04	.80	.65	.66	.90
1881.....	.66	.72	1.04	.80	.66	.68	.90
1882.....	.66	.72	1.04	.80	.68	.70	.90
1883.....	.66	.74	1.00	.80	.70	.75	.80
1884.....	.64	.74	1.00	.80	.70	.75	.80
1885.....	.62	.72	.90	.75	.64	.75	.80
1886.....	.60	.70	.90	.75	.65	.75	.85
1887.....	.60	.70	1.00	.80	.66	.75	.85
1888.....	.64	.70	1.00	.80	.68	.75	.85
1889.....	.64	.68	1.00	.80	.68	.75	.85
1890.....	.66	.70	1.00	.80	.70	.75	.85
1891.....	.68	.66	.97	.80	.76	.79	.83
1892.....	.65	.69	1.05	.80	.75	.78	.86
1893.....	.69	.61	.99	.80	.76	.81	.87
1894.....	.68	.65	1.00	.80	.77	.81	.87

\* In the Grand Duchy of Luxemburg iron ore is frequently found at a depth of from 6 to 30 feet below the earth's surface. In such cases, the soil which covers the lode is removed, the men thus employed being called surface miners.

GEORGE H. MURPHY,  
*Vice-Commercial Agent.*

LUXEMBURG, *October 15, 1894.*

## LABOR ARBITRATION IN FRANCE.

Toward the close of the year 1892, the French Chambers enacted a law providing for "conciliation and arbitration in conflicts between employers and workmen." The act contemplates the voluntary submission by the parties interested of the questions at issue between them, bearing on the condition of labor, first to a committee of conciliation, consisting of delegates chosen by the respective parties, and, secondly, in case of failure to agree on the part of such committee, to a council of arbitration. The proceedings may be initiated by either party, or, in case of a strike, upon the invitation of the justice of the peace of the district or canton; but in all cases, the agreement of both parties to submit the question is essential. The process is substantially as follows:

The parties—employers or workmen—file with the justice of the peace of the canton a written declaration setting forth the names, professions, and domicile of the petitioners and of the persons to whom the proposal for conciliation or arbitration is to be addressed; the subject matter of the conflict, with a detailed statement of the motives or reasons alleged by the respective parties; and the names, professions, and domicile of the delegates chosen by the petitioners to assist or represent them. The number of delegates can not exceed five, and they must be citizens of France. The justice of the peace thereupon delivers a receipt for the declaration, indicating the date and hour of the filing, and causes notice to be served on the adverse parties. An answer to this notification must be filed within three days, a failure so to do being taken as a refusal to submit the matter in controversy. Provision, however, is made for an extension of time upon application made within three days.

If the proposition is accepted by the adverse parties, they must state in their answer the names, professions, and domicile of the delegates; these delegates being subject, of course, to the same provisions in relation to the number and citizenship as those chosen by the petitioners. After the acceptance is filed, the justice invites the parties or delegates to form at once a "committee of conciliation." The meetings of the committee are presided over by the justice. If an agreement is reached by the committee, it is reduced to writing by the justice and signed by the parties or delegates. In the event of a disagreement in committee, arbitrators are chosen on both sides, or, when practicable, a common arbitrator. If the arbitrators fail to agree, they can choose a new arbitrator or referee who will have the casting vote; if they can not agree upon the selection of such referee, they declare the fact in writing, and, thereupon, such declaration, being transmitted by the justice to the president of the civil court (*président du tribunal civil*), the latter will appoint such referee.

The decision of the dispute, drawn up and signed by the arbitrators, is remitted to the justice of the peace. The declarations and decisions are preserved in the office of the justice, who delivers a copy to each of the parties and addresses another, through the prefect of the department, to the Minister of Commerce and Industry.

In case of a strike, if the initiative has not been taken by any of the parties interested, the justice of the peace, by virtue of his office, calls upon the employers and workmen, or their representatives, to make known to him, within three days, the subject-matter of the controversy, with a detailed statement of the motives or reasons alleged, their acceptance or refusal of conciliation or arbitration, and the names, professions, and domicile of the delegates chosen, if any. If the invitation of the justice is accepted, the proceedings will follow the course heretofore indicated.

The costs for the furnishing, heating, and lighting of the rooms necessary for the holding of the meetings of the committee of conciliation and councils of arbitration fall upon the commune, and the expenses of the committees

and councils are taxed by decree of the prefect and are charged to the budget of the department.

It will be noticed that under the law, the recourse to its provisions is purely voluntary, the intention and scope of the act being to furnish a method, not to prescribe a remedy. As to the enforcement of the decision of the council of arbitration the act is silent, and it is to be assumed that in case of a refusal to comply, the injured party would be remitted to his civil suit for damages.

The recent publication of the report of the director of the Office du Travail, addressed to the Minister of Commerce and Industry, affords an opportunity for judging of the practical operation of the law. The report covers the year 1893. It appears that, during that year, there were 634 strikes, and that proceedings under the provisions of the act were initiated in 109 instances, in all but seven of these instances a strike having been previously declared. In 56 cases, the application came from the workmen; in 5, from the employers; in 2, from employers and workmen together, while the justice of the peace intervened in the remaining 46. The result of these 109 invocations of the law of arbitration is as follows:

In 13 cases, work was resumed before the law could be applied, and in 8 of these the justice had intervened, and in 5, the application had come from the workmen. In 45 other cases, the resort to conciliation was frustrated by refusals to submit, 37 of these refusals coming from the employers, 6 from the workmen, and 2 from both sides. In the 37 instances of refusal by employers, the application had been made by the workmen in 28 cases, and the justice had intervened in 9. In the 6 instances of refusal by the workmen, the application had been made by the employers 3 times, the justice intervening in the other 3.

In the 51 remaining cases, committees of conciliation were constituted, and in 30 instances a satisfactory solution of the differences was obtained, a conclusion being reached by the committee in 25 cases and by a subsequent arbitration in 5. In 9 of these proceedings, the demands of the workmen were granted, in 3 refused, and a compromise decision reached in 18.

The 21 other submissions failed of any practical result, one because two successive referees appointed by the President of the civil court declined to serve, two because the workmen refused to ratify the decisions, and the others by reason of a refusal, by one side or both, to consent to a council of arbitration or appointment of a referee.

I am unable to obtain any official figures in relation to arbitration for the past year, but in his report to the Minister of Commerce and Industry, the director of the Office du Travail states that up to the time of writing—September 1, 1894—the recourse to the law had been larger, in proportion to the number of strikes, than during 1893.

CHARLES W. WHILEY, JR.,  
*Consul*

ST. ETIENNE, *December 6, 1894.*

## LEHNER'S ARTIFICIAL SILK.

Consul Germain, of Zurich, under date of December 17, sends the Department a description of the artificial silk produced by the process of Dr. Lehner, of Zurich. This description, obtained from the inventor, is substantially the same as that published in CONSULAR REPORTS No. 171 (December, 1894), p. 538, under the heading "Artificial Silk in England." The following additional matter is supplied by Consul Germain:

The process is patented in the principal European countries. Patent has also been applied for in the United States, and in the English colonies of North America, where a company with a capital stock of \$1,500,000 is in course of formation. A company for the acquisition of the patent rights in European countries and the British colonies (except British colonies in North America), owned by Dr. Lehner, was formed in England last July with a capital stock of £108,000 (\$540,000). The patent rights were then purchased, Mr. Lehner receiving £32,000 (\$160,000) in cash and £36,000 (\$180,000) in full paid-up shares, thus leaving £40,000 (\$200,000) of working capital to carry on the manufacture of this artificial silk.

The intention was first to manufacture the raw material in England, but as a large quantity of alcohol is consumed in its manufacture, and the tax on alcohol in England is almost prohibitory for manufacturing purposes, the company decided to establish the factory in a country where spirits used for the arts, science, and manufacturing purposes are untaxed. The plant was therefore established at Glattbrugg, near Zurich, under the supervision and management of Dr. Lehner, who, in addition to being a heavy stockholder, receives a nominal annual salary of £600 (\$2,919.60) for his services. Here alcohol consumed for such purposes is untaxed.

The artificial silk is thus forwarded in a raw state to England and there manufactured into textile fabrics of every description.

Dr. Lehner says that it is the intention to manufacture this artificial silk in America, provided alcohol used for its manufacture is tax free; otherwise, it will have to be manufactured in Switzerland and then forwarded to America as raw silk, to be there manufactured into textile fabrics. He also says that so far his English company has not come into competition with the real cocoon silk, his articles being mostly used to mix with cotton and wool, but, of course, there is no telling how sharp a competition this artificial article will bring against real silk in the future.

I give below a copy of part of the prospectus issued by the English company during its formation period (July, 1894), which may throw additional light on the subject:

Lehner's artificial silk is a new material for use in textile manufacture, possessing distinct and valuable characteristics, which render it unique among all fibers hitherto existing. As the result of study and analysis of the natural methods of production of silk by the silkworm,



the inventor has, by simple chemical and mechanical means, closely and successfully reproduced a natural process. Wood pulp, cotton, or jute waste, etc., are chemically digested and the liquid product is spun by a mechanical silkworm to a thread of even diameter throughout, and of unbroken and unlimited length. The same machine which draws the threads from the liquid twists these threads in any desired number into the requisite "count," or thickness of yarn, in one uninterrupted and continuous process with perfect regularity. The machine is inexpensive and extremely simple. It can be run day and night without intermission, and requires but little power and attention.

The principal features of this process are (1) never failing supply of the raw material; (2) practically uniform price of same; (3) simplicity of machinery, so as to avoid risk of breakdown; and (4) no skilled, and only a small amount of low-priced, labor is necessary.

The production of Lehner's artificial silk is entirely independent of climate, temperature, special soil, or cultivation.

Lehner's artificial silk has been spun in Bradford, and has been worked up in a large variety of fabrics. In the dyeing, weaving, and finishing of these sample fabrics, no special treatment has been necessary. Unlike most vegetable fibers, Lehner's artificial silk can be dyed in all colors, and the shades obtained excel in brilliancy and delicacy those of the finest natural silk.

For softness and beauty of appearance the new material equals the best Chinese and Italian silks. By its use, therefore, in combination with cotton, wool, or natural silk, brocaded and other ornamental and decorative results can be obtained, which have hitherto been unattainable except by the employment of the finest trams, and the expensive character of these necessarily limits their sale for this purpose. The cost of Lehner's artificial silk being small, it follows that that fiber will open out a large and profitable new field to manufacturers, affording encouragement to them in the production of an unlimited variety of both choice and salable novelties in fabrics of almost every description.

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## A PETROLEUM HEATING APPARATUS.

The Leemann-Baumgartner system of heating by air and oil combined, the invention of Johannes Leemann, 43 Leonhard street, St. Gall, Switzerland, may be briefly explained as follows: By means of an air pump, compressed air is forced into and mixed with oil which, passing through tubes to burners (which have been previously heated), becomes gasified and burns fiercely with a blue flame of great force and with excellent results.

Among the advantages claimed, the following may be stated:

(1) There is an entire absence of smoke or smell at the outlet of the chimney.

(2) There are no ashes.

(3) No coal is required to start working, as a small quantity of paraffin placed in the trays of the burners and set alight will heat the burners in a few minutes, before turning on the apparatus.

(4) One man can attend to the work of firing that would require four or five men in ordinary coal firing, but arrangements could be made to work the machine automatically to a great extent.

(5) Oil fuel will take up much less space than coal fuel—60 to 70 per cent less, at least.

(6) Three oil burners tried on a 16-horsepower boiler raised steam in one hour, burning 3 gallons of oil. It took  $1\frac{1}{2}$  cwt. of coal to raise steam in the same boiler, and the time occupied was one hour and a half.

(7) At the present time, taking the cost of oil to be  $2\frac{3}{4}$ d.\* (price in England) per gallon, the oil used being the Russian refined or the ordinary commercial paraffin, a considerable gain would be shown over the use of coal, the amount of such gain depending, of course, upon the cost of coal, which varies considerably in different localities. However, 3 gallons of oil will effect what  $1\frac{1}{2}$  cwt. of coal would do, but in one hour instead of one hour and a half, and with a proportionate reduction in cost of stokers; also, less space required for stowage and a much less proportionate weight to carry.

(8) The oil tanks can be stowed away underground, or, in the case of vessels, in the lower hold, far away from the furnaces, as the pipes may be carried any distance; in locomotives, on the tender. As no heat or light of any kind comes near the tanks, or even near the apparatus, there can be no risk of explosion; in fact, there would not be so much risk as from the use of coal. Oil tanks are air-tight; coal bunkers are entered by men with lights, and explosion or spontaneous combustion may arise.

(9) The apparatus is of the simplest character. It is inexpensive, and contained in a small compass. The system can be adapted to any furnace now in use without alteration, with the exception of the removal of the fire bars, which are not needed, and thus a further expense would be saved.

The Leemann-Baumgartner system, it is claimed, has solved the problem of how to use oil safely, economically, and simply, as the methods employed and the burners, as now perfected, have been found to answer every purpose.

Extensive deposits of petroleum are being discovered in all parts of the world, and it should soon be as easy to obtain supplies of oil fuel as of coal fuel; however, should a supply of oil fail at any foreign port, the burners could be temporarily removed without the least difficulty, the fire bars replaced, and coal used in the ordinary way, until a fresh supply of oil became available.

A few of the special uses of this fuel may be pointed out:

*Navy.*—The advantages to torpedo boats, cruisers, and men-of-war must be incalculable—no smoke, no dirt, lessened risk, with more heating power and less stowage room—all points of the utmost importance. Mr. F. Seaton Snowden says in his report:

As, once the burners are lit and regulated, there is no necessity to again open the fire door, the temperature of the stokehole may be kept down to the minimum temperature, a fact of great importance in hot countries and on board ship.

*River traffic.*—When it is once demonstrated that this fuel can be safely and economically used on steamers that ply on rivers, there will be here a vast field for the enterprise, the municipal authorities being sure to insist

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\* About  $5\frac{1}{4}$  cents.

upon the use of this fuel instead of coal, and so do away with the smoke nuisance.

*Brewing.*—This is an enormous trade. Some of the breweries are at present using the petroleum oil in conjunction with coal as fuel, but it is a dirty, difficult, and expensive system compared to the Leemann-Baumgartner, requiring as it does a jet of steam, which, mixing with the oil as it enters the coal furnace, causes it to fire and explode before it touches the coal. With the Leemann-Baumgartner system no coal is used at all, and no steam, but simply compressed cold air and oil—a perfectly clean, simple, and economical fuel of complete combustion.

The apparatus has recently been subjected to a thorough practical test at the locomotive works of Messrs. Hathorn & Co., of Shoreditch, England. This test was made under the supervision of Mr. S. Seaton Snowden, member of the Institute of Mechanical Engineers and associate member of the Institute of Naval Architects. Mr. Snowden says:

The boiler used in the test was of the locomotive or multitubular type, having a fire box measuring, inside, 3 feet 6 inches by 3 feet 3 inches by 2 feet 9 inches and 52 tubes, 2½ inches inside diameter and 7 feet 3 inches long. The boiler contained, at the commencement of each trial, 260 gallons of water, the temperature at the commencement being 53° F.

The oil used was the ordinary commercial paraffin, the supply on the second day being of inferior quality. A full report on the quality and heat values of these oils will be furnished in due course. There was an entire absence of smoke, and no odor at the outlet of the chimney throughout the trial—a sure indication that the combustion was complete, and a point of the utmost importance to users of steam in towns, as well as for naval purposes generally.

From these trials I am convinced that, in installations where the Leemann system is fitted, one stoker would do the same work, power for power of boilers being equal, as would require four stokers with ordinary coal firing.

The available heating surface in the fire box is considerably increased, owing to the plane of the burners being below the plane of the fire bars; in the boiler tested, this amounted to 15 inches, or a gain of 17 square feet of surface.

As these tests show that one pound of oil will do the work of from 3 to 4 pounds of coal, it is evident that the bunker space can be correspondingly decreased; or, what is of more importance in the case of war ships, carrying the same weight of "oil" fuel, means quadrupling their radius of action. The many advantages of less bunker space in cargo vessels are obvious.

The absence of ashes, smoke, and smell are desiderata which cannot be overestimated, especially for passenger ships or use in crowded towns.

There are no moving parts within the radius of heat, and only a simple air pump for forcing the oil (at a pressure of 6 to 8 pounds per square inch) to the burners and the necessary regulating valves outside the boiler; hence there is nothing to get out of order.

As, once the burners are lit and regulated, there is no necessity again to open the fire door; the temperature of the stokehole may be kept down to the minimum—a fact of great importance in hot countries and on board ship.

Beyond warming the burners by burning a pint or so of free oil in a tray, lighting and regulating the supply of oil at the outset (operations which occupied four and one-half minutes each day of the trials), the stokers have literally nothing to do but watch the steam-pressure gauge and adjust the supply of oil accordingly, the perfect combustion at the burners removing all necessity for tube cleaning.

Owing to the full heating effect being available at the outset, steam is raised more rapidly than can be done with coal firing. On the first day of the trial, 5 pounds of steam were got in sixty-five minutes, and, on the second day, the same pressure was got in forty-seven and one-half minutes—the difference of time being due to the fact that the third burner was lit earlier on the second day than on the first. This boiler, with ordinary coal firing, takes eighty to ninety minutes to raise five pounds of steam.

The statement made in reference to bunker space applies also to carriage of fuel, which would be only one-third to one-fourth the amount that would have to be paid on the quantity of coal necessary to generate the same amount of power.

#### RESULTS OBTAINED.

In the first day's trials two (out of three) of the burners were lit at 1.54 p. m. and the following steam pressures were noted: At 2.59 p. m., 5 pounds; at 3.06 p. m., 10 pounds. At this point a half-inch steam blast was turned on to note the effect of increased draught; this greatly reduced the pressure. At 3.19 p. m., 15 pounds; at 3.24 p. m., 20 pounds; at 3.29 p. m., 25 pounds; at 3.32½ p. m., 30 pounds. At this point an engine, having a 6½-inch piston and 10-inch stroke, was started running at eighty revolutions per minute, no load, and the pressure increased as follows, the starting of the engine having at the outset reduced it to 27½ pounds: At 3.52 p. m., 35 pounds; at 3.56½ p. m., 40 pounds; at 4.06 p. m., 43½ pounds. This latter pressure was reduced to 40 pounds, and the test for evaporation then commenced, with the following results:

During the first day's trials, 25 gallons, or 250 pounds, of water were evaporated with a consumption of exactly 16 pounds of oil, or 16.8 pounds of water per pound of oil. This result, with the thermal value of the oil used, gives 88.42 per cent of the total heating value obtainable. It is generally known that the ordinary petroleum of commerce is in heating effect about 7 per cent below the value of pure petroleum; had the latter been used, these figures would have been proportionately higher.

In the second day's trials, the oil used was unfortunately of an inferior quality to that used on the first day. Allowing for the difference in the calorimetrical value of the oils, and correcting the figures so as to read to the value of the oil used on the first day, I find the following results were obtained: Thirty-five gallons, or 350 pounds, of water were evaporated with a consumption of 21.6 pounds of oil, or 17.41 pounds of water per pound of oil.

This result, corrected to the same thermal value as that of the oil used on the first day, gives 91.82 per cent of the total heating value obtainable.

From the above, it will be seen that the mean results of the two days' trials read as follows: Sixty gallons, or 600 pounds, of water were evaporated with a total consumption of 37.6 pounds of oil, or a mean of 17.1 pounds of water per pound of oil, the mean thermal result, or heat utilized, being 90.12 per cent of the total heating value obtainable.

There is one important point and that is, if by using oil fuel in the place of coal, the evaporative efficiency of a boiler can be so greatly increased, it follows that the same boiler will supply considerably more power when "oil stoked" than when fired with coal; or for the same output of power, a considerably smaller boiler will suffice, if fitted with this system of heating.

I would further point out that the increase of heating surface, coming as it does at the bottom of the fire box, occurs at the very best part of the boiler, both as regards heating effects and the more thorough circulation of the "dead," or cold, water that always remains inert below the level of the ordinary fire bars.

#### COMPARATIVE COST OF COAL AND OIL HEATING.

The figures following are given as showing the difference of cost that would accrue in running the boiler at Messrs. Hathorn's works, at Shoreditch, for twelve months with coal and oil, respectively.

*Cost of coal, etc.*

Description.	Cost.		
	<i>£</i>	<i>s.</i>	<i>d.</i>
1 stoker at 30s. per week.....	78	0	0
104 tons coal (delivered) at 20s. per ton.....	104	0	0
Carting 24 loads of ashes.....	3	12	0
2 sets bars (8s. 6d. per cwt.).....	1	19	0
1 set stoking tools.....	0	9	6
Total.....	188	0	6
			£379. 58
			506. 11
			17. 52
			9. 48
			2. 43
			915. 02

*Cost of oil, etc.*

Description.	Cost.		
	<i>£</i>	<i>s.</i>	<i>d.</i>
1 lad at 18s. per week.....	46	18	0
35 tons oil (delivered) at 50s.....	87	10	0
New nozzles.....	0	3	0
Total.....	134	11	0
			£228. 24
			425. 81
			. 73
			654. 78

These figures show a decided gain in favor of oil stoking, and would be even more favorable in cases where a large number of stokers are employed; but the concurrent advantages of oil stoking are so great that I question whether this system, even if it cost as much as coal, would not (having regard to the many points of advantage) be cheaper in the end.

Drawings of the Leemann-Baumgartner petroleum heating apparatus are given herewith, together with detailed explanation.

## DESCRIPTION OF THE APPARATUS.

Fig. 1 is an elevation of the improved burner, a part of the casing being broken away to show the internal arrangement.

Fig. 2 is a section on the line *x, x*, of fig. 1.

Fig. 3 is a section on the line *y, y*, of fig. 2, and

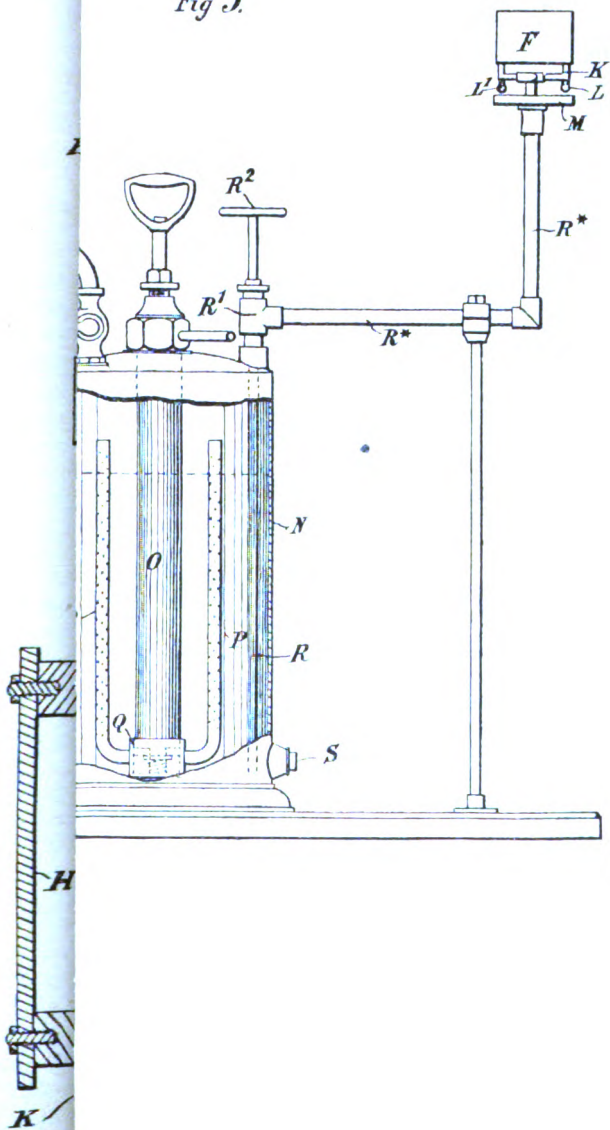
Fig. 4 is an underside view of the burner.

Fig. 5 is a side elevation showing one arrangement of the apparatus, and the means employed for impregnating the petroleum in the reservoir with air, a portion of the casing or such reservoir being broken away.

The burner shown comprises two inclined sets of tubes *A, A<sup>1</sup>*, the tubes of each set being screwed into upper and lower bars *B, B<sup>1</sup>*, and communicating with channels *C, C<sup>1</sup>*, formed in the said bars. These channels are provided with stops or plugs *D* between the ends of alternate tubes, as shown, whereby the vapor is caused to circulate along the tubes *A, A<sup>1</sup>*, the course thereof through one set of tubes being indicated by the arrows in fig. 3. In the other set of tubes, the flow of the vapor is in the opposite direction. These tubes *A, A<sup>1</sup>*, and channels *C, C<sup>1</sup>*, thus constitute the sinuous or zigzag passages. By this arrangement, and owing to the long path presented by the two sets of tubes, vaporization is greatly expedited.

The flame issues from a narrow opening *E* formed in the upper part of the burner between the adjacent bars *B, B<sup>1</sup>*. The burner is cased in by plates *F* held in position by screws *G*, and by end plates *H* having air apertures *I*, the plates *F* having perforations through which pass the heads *D\** of the plugs *D*.

Fig 5.





For heating the burner at starting, a dish or tray M is provided, in which spirit is placed, and it is located below the burner in the manner well understood, the heat of the flame issuing from the opening E serving alone to maintain the burner at the proper temperature, once the apparatus is at work.

The petroleum is led to the burner through the tubes K, K<sup>1</sup>, and on arriving at the highly heated sinuous or zigzag passages, is rapidly converted into vapor, which is discharged through the upwardly directed nozzles L, L<sup>1</sup>, into the interior of the burner, and becomes ignited on leaving the same through the opening E. It will be seen that the tube K and nozzle L, serving for one set of tubes, are situated respectively on opposite sides of the burner to the tube K<sup>1</sup> and nozzle L<sup>1</sup> for the other set of tubes. If desired, and when the burner is to be used for illuminating purposes, the opening E may be covered with a strip of wire gauze, thereby increasing the luminosity of the flame.

N is the petroleum reservoir, being provided with a charging funnel N<sup>1</sup>, an air inlet valve N<sup>2</sup>, and a pump, O.

The means for insuring effective impregnation of the petroleum in the said reservoir with air, comprises the upwardly directed perforated discharge tubes P, through which the air, forced in by the pump, passes into the petroleum in the reservoir and bubbles up through the same. The communication between the tubes P and the pump O is formed by a casing Q which incloses the lower outlet valve of the pump, and to which the said discharge tubes are connected.

The petroleum is discharged from the reservoir through a pipe R which, extends nearly to the bottom thereof, and communicates at its upper end with pipes R\*, R\*, by which said petroleum is conveyed to the burner. The flow through the pipes R, R\*, may be controlled by a valve R<sup>1</sup>, operated by a handwheel R<sup>2</sup>. And in order to prevent accidental choking of the apparatus, by any solid materials that may happen to be present in the petroleum, rolls of wire gauze are inserted in the pipes R, R\*, and K, K<sup>1</sup>, near the bends thereof, or elsewhere, if desired.

In starting the apparatus, petroleum is introduced into the reservoir N through the funnel N<sup>1</sup>; the air inlet N<sup>2</sup> and valve R<sup>1</sup> are then closed, and sufficient spirit is poured into the tray M and is ignited so as to heat the burner to the proper degree, which may be known, for instance, by its causing a hissing sound when touched with the moist finger. While the burner is being thus heated, which only takes a few minutes, the pump O is worked till the pressure in the reservoir is about one atmosphere. The valve R<sup>1</sup> is then carefully opened and petroleum is allowed to flow to the burner, on reaching which, as before stated, it becomes rapidly vaporized, and in which state it is discharged from the nozzles L, L<sup>1</sup>, and ignited above the burner. The speed of the pump O and the extent of opening of the valve R<sup>1</sup> must be so adjusted as to give a steady flame of the required size.

Instead of the petroleum being discharged through the pipe R, it may be discharged through the outlet S, and may be led to any suitable number of burners, through corresponding pipes.

Having now particularly described and ascertained the nature of this invention, and in what manner the same is to be performed, it is claimed—

(1) In apparatus for illuminating and heating by means of petroleum, a burner having sinuous or zigzag passages presenting a large and highly heated path, whereby the rapid vaporization of the petroleum is effected, the flow of the vapor through one set of passages taking place in an opposite direction to that of the other set, substantially as set forth.

(2) In apparatus of the kind referred to, a burner comprising two inclined sets of tubes A, A<sup>1</sup>, wherein vaporization is effected, and connected to bars B, B<sup>1</sup>, having channels C, C<sup>1</sup>, tubes K, K<sup>1</sup>, by which petroleum enters the burner, nozzles L, L<sup>1</sup>, from which the vapor is discharged into the body of the burner, and an opening E through which the vapor issues and is ignited, substantially as described.

(3) In apparatus of the kind referred to, the combination with the pump O, of the perforated discharge pipes P for impregnating with air the petroleum in the reservoir prior



to its passage to the burner, substantially as described and shown, and for the purpose set forth.

(4) Apparatus for illuminating and heating by means of petroleum, constructed, arranged, and operating substantially as hereinbefore described and shown with reference to the accompanying drawings.

Mr. Leemann has already obtained patents in England, France, Belgium, Germany, and Austria. A patent has been applied for in the United States, but has not yet been granted.

IRVING B. RICHMAN,  
*Consul-General.*

ST. GALL, *December 10, 1894.*

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## USE OF PETROLEUM IN RUSSIA.

I have made inquiries as to the use of petroleum in Russia for domestic heating and cooking purposes, and the results may be summed in a brief statement as follows:

For domestic heating purposes, petroleum is not used in Russia at all, the predominant fuel in the largest portion of the Empire being wood, supplemented with coal. For cooking purposes, kerosene is used only on a very limited scale and in exceptional cases, much less so, on the whole, than in the United States. The ordinary American kerosene stoves have been largely imitated in Germany and introduced into the Russian market. They are of various sizes and sell as low as 6 rubles\* (about \$3) apiece. Of the larger sort, the variety most in favor seems to be the "Brilliant" kerosene cooking stove, sold at 14 and 16 rubles. A description of these cooking stoves would seem to be superfluous, as they are simply imitations of well-known American originals.

In the last few years, the "Bade Kerosene Gas-Burner," of Swedish origin and manufacture, has been introduced into Russia, and there is said to be a considerable demand for it. This kerosene gas-burner is also known and patented in the United States.

By means of an air pump, the petroleum is forced from the reservoir into a cylinder, encircled in its upper portion with a basin, in which alcohol is burned to heat the cylinder and change the rising kerosene into gas, in which form it reaches the burner. The ordinary domestic petroleum gas-burner, made of brass, is sold at 7 rubles (\$3.50). About twenty thousand are said to be in use in Russia.

CHARLES JONAS,  
*Consul-General.*

ST. PETERSBURG, *December 10, 1894.*

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\*The consul-general values the ruble at 50 cents; the United States Treasury valuation on January 1, 1895, was 36.4 cents.

# PÉTROLEUM TRADE OF THE STRAITS SETTLEMENTS.

I have the honor to submit the following report on the petroleum oil trade of the Straits Settlements for 1893:

The official Government returns place the total imports of petroleum into the various ports of this colony for 1893 at 1,056,167 cases, as against 885,472 cases for the previous year, an increase of 170,695 cases, as follows:

Whence imported.	Singapore.	Penang.	Malacca.	Total.
1892.	Cases.	Cases.	Cases.	Cases.
United States.....	170,158	152,700	.....	322,858
Russia.....	141,702	252,449	.....	394,151
Sumatra.....	38,145	66,153	.....	104,298
Other countries.....	38,031	2,845	23,289	64,165
Total.....	388,036	474,147	23,289	885,472
1893.				
United States.....	212,820	28,409	.....	241,229
Russia.....	276,753	230,384	.....	507,137
Sumatra.....	159,780	110,900	6,112	276,792
Other countries.....	1,384	12,751	16,874	31,009
Total.....	650,737	382,444	22,986	1,056,167

As regards the imports of American oil, the figures above given do not tally with my own, which, for 1893, are, at Singapore, 264,690 cases, as per our landing certificates, and at Penang, 56,802 cases, as per United States consular agent's report, making a total of 321,492 cases, or 80,263 cases more than that stated by the Government.

Notwithstanding this, it will be noted that it is from Russia and Sumatra that the greatest increase in importation has taken place, the one having risen from 394,151 cases in 1892 to 507,137 cases in 1893; the other from 104,298 cases in 1892 to 276,792 cases in 1893.

This augmentation in the latter would seem to be mainly due to the fact that the island of Sumatra is within such easy reach of the Straits Settlements; the other to the foresight of the Russian importers in bringing the greater portion of their oil here in bulk and then storing it in reservoirs, one of which they have constructed just off Singapore and the other near the port of Penang.

With these advantages, it is not surprising that petroleum from Baku is supplanting in this market that from our wells.

In conclusion, I will say that, in my opinion, the only way in which the Americans can make their oil hold its own and successfully compete with its rivals in this most valuable trade, is to have tank steamers in which to transport it here, and reservoirs on the spot in which to store it on arrival.

The large amount of exports from the Straits Settlements to the United States would seem clearly to show that such vessels could safely depend upon having return cargoes.

E. SPENCER PRATT,  
*Consul-General.*

SINGAPORE, *November 17, 1894.*

#### SUPPLEMENTARY REPORT.

Referring to my report of the 17th instant on the petroleum oil trade of the Straits Settlements, I have the honor to report that with a view to obtaining particulars for transmission to the Department in regard to the importation into this colony of oil from Russia, both in case and bulk, in 1892 and 1893, and of the Langkat (Sumatra) oil industry and exportation during the same period, I addressed myself to the agents of the Russian oil here—Messrs. Syme & Co.—and the agents of the Langkat oil—Messrs. Hooglandt & Co.—both of which firms have declined to enlighten me in any form or manner on the above points, as you will note from the inclosed copies of their replies, the first stating that as any information they might give would probably be used for the benefit of exporters of American case oil they must beg to be excused from complying with my request; the latter, that they were not allowed to supply the reports asked for.\*

E. SPENCER PRATT,  
*Consul-General.*

SINGAPORE, *November 30, 1894.*

#### PETROLEUM IN CEYLON.

With reference to my report on "American Kerosene Oil in Ceylon," dated September 4, 1894,† I append hereto some remarks on the subject, appearing in the Times of Ceylon yesterday, in which the American consul is alluded to casually, without my previous knowledge or consent. Since the matter has taken this shape, I desire to say that, though seriously deprecating any movement militating against American kerosene oil here, I can, at the same time, imagine that the efforts described in the correspondence in question, in behalf of Russian oil in bulk, may be prompted by a good motive. For instance, steam power is absolutely necessary in the tea districts, and wood for fuel is becoming scarce. In many places it is very injudicious to destroy any more forest, or jungle; accordingly, some cheap and portable fuel must be secured. Petroleum seems to be the most feasible product for that purpose, and in this view of the case, the efforts of the local govern-

\*NOTE BY THE DEPARTMENT.—As the letters mentioned contain no information in addition to that given in the quoted extracts by the consul-general, it is not deemed necessary to print them.

† Printed in CONSULAR REPORTS No. 172 (December, 1894), p. 557.

ment to supply it in bulk, as cheaply as possible to intending consumers, would be justifiable, unless it appeared that "case oil" (which can never be largely used as fuel) was highly taxed, and the proceeds of that impost devoted to the support of "bulk oil." For I take it as a fact that the consumers of case oil have as good a right, or even a better claim on the Government than the prospective users of bulk petroleum can legitimately have; for case oil, being used as an illuminant, supersedes at least an equal quantity of cocoanut oil, similarly used, thus setting free for exportation the cocoanut oil, which commands more than double the price of kerosene, and therefore leaves a large margin of profit to the island trade, besides providing a better illuminant.

The local shipments of cocoanut oil to America in 1893 amounted to \$746,139, and it was all admitted free of duty; whereas, the local importations of kerosene from America are nil, and the duty is about 50 per cent ad valorem. This, I consider, is a remarkable commentary on "fair trade" relations between the two countries.

W. MOREY,  
*Consul.*

COLOMBO, *November 6, 1894.*

#### RIVAL OIL TRADES.

[From the Times, of Ceylon, November 5, 1894.]

We are by no means wishful to foster trade jealousies by stirring up strife between those who are engaged in the same business; but when we are asked to call attention to the different treatment accorded by the local government to one company to what is done in the case of another, we can not refuse to allude to the matter. As to the accuracy of the statements made by the writer of the following we can form no opinion, but we must say that we can hardly bring ourselves to believe that the Government would go so far out of their way to encourage a particular branch of a trade as is here related. Our correspondent says:

"I see you are under the impression that the tank oil syndicate are to bear the cost of dredging out a channel for their use, so that steamers may lie alongside their jetty. Nothing of the sort; the Government are going to pay for it. It seems incredible, but it is a fact. Nor is this the only privilege accorded to this syndicate, who, the lieutenant-governor said in his reply to Mr. Mitchell in council, are bent on 'encouraging the new trade of importing petroleum in bulk.' Why this particular trade should be encouraged and not others I can not for the life of me see. Not content with dredging the harbor at public expense for the use of the syndicate referred to, you will hardly believe it, but the Government are going to construct, also at the public expense, special sidings on the railway for the use of the syndicate at all the more important stations on the line. Not content with this, Mr. Pearce has been instructed to build tank wagons specially for the purpose of carrying the oil in bulk from Colombo all along the railway. And who do you think is to pay for these specially constructed wagons, the syndicate? oh! dear no—the public again. Now I ask you, Mr. Editor, whether you think this is fair to the people interested in case oil? The latter trade is not going to be killed out by the tank-oil business; not for a moment. It has not been even 'scotched' at other ports, and it won't be here. \* \* \* By all means, let the bulk-oil trade expand and grow if it can do so in a fair field where no favor is shown, but why public money should be expended in bolstering up this \* \* \* monopoly I can not see. Not only so, but this

unfair treatment chiefly affects American case oil, of which there is hardly any left in the market, so that, while we are doing our best to get the Americans to drink Ceylon tea, all the time we are also doing our best to encourage and support the rival Russian oil. A more suicidal policy surely never was adopted. The American consul is pretty sure to report all this to his Government, and it is not likely to predispose the latter in favor of Ceylon tea."

The Government, in our opinion, should encourage all trades; but, if the above is a correct statement of facts, they seem in this matter to have gone beyond legitimate encouragement in many ways, while what is said of the desirability of reciprocity with America in this matter is much to the point. We should leave no stone unturned to endeavor to establish reciprocal trade with the United States, and in this matter our Government do not seem to have had this in mind as much as they ought. They should certainly be interrogated on the subject in council as soon as possible.

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### ELECTRIC LIGHTING FOR CARRIAGES.

Gas lighting, which was common in London as early as 1810, was not introduced into Paris until 1819, and more than twenty years elapsed before its use as an illuminant became general in France. On the other hand, when we turn to the subject of electric lighting, it must be admitted that France has taken a foremost rank among European nations in adopting the electric light.

In Paris, electrically lit private carriages have, for the last five years, been extensively patronized by the affluent classes, but only recently has this process of lighting been applied to private carriages in London and Berlin. The Prince of Wales was the first to adopt it in London, and now we learn that the German Emperor has brought the resources of his active mind to bear on the subject of lighting carriages, and, as a consequence, the court carriages in Berlin are now lit by electricity, not only by outside lanterns, but also in the interior, which is illuminated by a series of accumulators carried in the vehicles. "All over the harness are placed what the Germans call *Glühlampe*, or small, colored lights, which glow like fireflies when the carriage is in motion."

There seems no valid reason why all public conveyances, cabs, omnibuses, tram cars, etc., as well as private carriages, should not be illuminated by electricity. It would certainly largely enhance not only the comfort, but the safety of locomotion in the thoroughfares of large cities. Indeed, it has been found that in a carriage supplied with a properly arranged electric light, the most formidable of outdoor foes, the dense fogs of European cities, might almost be defied, while the brilliant, searching electric light would enable passengers to amuse themselves by reading books and newspapers. It is, moreover, obvious that the adoption, on an extended scale, of electricity as an illuminating agent in private and public vehicles would serve a double purpose—first, one of a distinctly practical usefulness; next, that of increasing the brightness and cheerfulness of the streets, which would materially aid in the beautifying of a city. Again, it has been ascertained

that the more the omnibus and tram car companies make their vehicles attractive, the greater will be their traffic.

In private carriages, the electric lamp is placed inside, in the center of the roof, and the twin lights, for there are two, contained in flat vial-shaped vacuum glasses, are shielded by a circular glass plate rather larger than the "bull's-eye" of an ordinary search light, but neither convex nor concave. At the back of the lamp, there is a dome or bell-shaped enameled reflector. The horseshoe carbon filaments, which become incandescent, are very diminutive, and the current is conveyed to them by platinum wires. In order to economize space, the flat vacuum glasses are not hung vertically in the bell protector, but lie horizontally, and in order to prevent the wires dropping downwards when hot a little glass stilt is added to support them. In this way, the roof of a brougham is filled with a light diffuser which will not interfere with a person's head entering the vehicle. Each of these lamps give a light equal to seven candles.

In the first attempts to light carriages in this manner the moving of the carriage was apt to jar the lamps, often causing a breakdown, and steel springs were not found sufficient to prevent this. The plan now adopted is to suspend the complete lamp in a sheet of rubber, which is attached to the interior of the carriage, neutralizing the vibration. It is only necessary to press a button in order to switch the current on, and by a second push it is turned off again.

A sufficient supply of electricity required for the lamp is stored in an accumulator. One accumulator, weighing two pounds, is the allowance for each lamp. Should the two outside lamps be also electric, two other batteries would be needed. The outside illuminators are not of the same shape, and differ in principle from the interior lamp, but an india-rubber socket is used to reduce vibration. Accumulator or accumulators, as the case may be, are carried in the boot, under the coachman's seat, and they are easily accessible. The coachman himself, without electrical knowledge, makes the necessary connections.

An eight-cell storage battery for an ordinary family carriage or brougham is simply a box 8 inches long, 4 inches wide, and 7 inches deep. This supplies the current to keep the lamp lighted for eighteen hours, which, ordinarily, is sufficient to last the owner of the carriage from one to two months. The cost of recharging varies, according to wear and tear, from 50 cents to \$1—not more than the expense entailed by the employment of oil lamps, which invariably give out an unpleasant odor and an uncertain illumination. The electric lamp does not wear out unless subjected to careless treatment, or unless it is weakened by the application of too strong a current. The accumulator, however, makes the latter contingency almost an impossibility.

There appears to be a fair prospect that, in the course of a few years, the majority of public conveyances in cities, as well as private vehicles, will be lighted by electricity; but the public will, of course, expect that electric lighting shall be superior to oil. This question seems to have been already

quite well determined. It has been found that an electric lamp of  $2\frac{1}{2}$  candle-power will enable any passenger to read in comfort while traveling. Apart from the actual amount of light to be afforded, which, of course, is capable of adjustment, it may be stated that the latest form of battery overcomes the difficulties which have hitherto stood in the way of the adaptation of electricity for the lighting of street conveyances.

A tram-car battery, working two lights to illuminate the interior as well as the colored lamps seen from the front or rear of the car, will weigh about 30 pounds, and furnish a light equal to  $2\frac{1}{2}$  candlepower, for forty-five to fifty hours. The battery is constructed to resist the jolting which accompanies the motion of a wheeled vehicle.

Lamps applied to omnibuses, trams, and cabs differ in form. The omnibus light is fixed in a globe, smaller and flatter than the pattern which screws the oil lamps in a European railway carriage. The incandescent carbon hangs downward, instead of projecting upward, as it does in table lamps. It is contained within a very small bulb. Behind it is a concave reflector of enamelled iron. There is no restriction as to the form of the tram lamp, as the same conditions do not apply, but in the cab lamp, where economy of space is a consideration, the globe, contained in a semicircular reflector, having a glass front, is placed upright at the back of the vehicle, over the passengers' heads. As these cab, tram, and omnibus lamps are of the Edison make, and there has been of late such a great reduction in their price to the public, it may be understood that in order to fit up public carriages with electrical illuminating power, much less expenditure is needed than is required to apply the light to a private carriage, the cost of such an installation, including the accumulator, being only about \$50.

C. W. CHANCELLOR,

*Consul.*

HAVRE, *December 22, 1894.*

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### ANOTHER CATTLE DECREE AT HAMBURG.\*

By a decree of the Hamburg senate, passed yesterday and published to-day, the entry into this port of all ruminating animals and swine from Great Britain and Ireland has, for the present, been prohibited. The ground given in the decree is the outbreak of the mouth-and-foot disease in different places in England. Those animals will still be admitted here which shall be proven to have left Great Britain or Ireland up to and including the 24th instant, but such animals are to be slaughtered immediately after their arrival. The regular legal penalties of fine and confiscation will follow any violation of the prohibition.

WM. HENRY ROBERTSON,

*Consul.*

HAMBURG, *December 22, 1894.*

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\* See "American Beef in Europe," CONSULAR REPORTS No. 171 (December, 1894), p. 489.

## AMERICAN SEEDS IN FOREIGN MARKETS.

Without doubting that our Agricultural Department is cognizant of some or all of the facts—if true—set forth in the accompanying notice, I have, nevertheless, thought it worth while to apprise the Department of this publication in a leading journal of Newcastle, having an extensive circulation in the north of England, as calculated to discredit the character of American seeds abroad, and to lessen the market for one of our important exports.

WM. S. CAMPBELL,  
*Consul.*

NEWCASTLE, *December 21, 1894.*

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[Extract from the Newcastle Daily Chronicle, of December 20, 1894.]

## SEEDS OR WEEDS.

As very large quantities of American clover seed finds its way into Europe, attention ought to be very forcibly directed to the results of a very exhaustive investigation made recently by the Ontario Agricultural Station, and which confirms those of several other experiment stations in the United States. To say nothing of Canadian exports, the United States exported in the first nine months of this year over 130,000 cwts. of clover seed, the value of which was returned at the ports of export at £2 6s. per cwt. This, and also much of that sold generally in North America, is described as "one of the most impure seeds now on the market." The examinations showed that in cleaned alsike, there were no less than 9 per cent of weeds, chiefly sorrel, while in the red clover there were 6 per cent. In the case of alsike this means that in every half ounce of seed there were no less than 1,800 weed seeds, and in the 6 pounds used for an acre of land no less than 700,000 weeds. This is not the whole exposure, for it was found that some of the more unscrupulous seedsmen make a practice of grinding up quartz, drying, sifting, and dyeing it, and then mixing it with clover seed. Nearly all the stations that have investigated the subject join in warning American and Canadian farmers to beware of low-priced seeds, to deal of none but respectable and responsible merchants, and to have samples of their seeds tested and examined at an experiment station before sowing. With the exports from America of the magnitude indicated above, the farmers of the United Kingdom ought to be equally careful in their purchase of American—or any other for all that—clover seeds.

## ACTION OF TOLEDO PRODUCE EXCHANGE.

TOLEDO, OHIO, *January 12, 1895.*

The following was offered to-day by William H. Morehouse, esq., and unanimously adopted by the exchange:

In last night's issue of the Toledo Blade, appeared the following article on the adulteration of clover seed:

"WASHINGTON, *January 11, 1895.*

"United States Consul Campbell, at Newcastle, England, has called the attention of the State Department to a notice published in a newspaper in that city purporting to give the results of the inquiry by the Ontario Agricultural Station into the quality of American clover



seed. The article states that the seed is the most impure in the market, containing no less than 9 per cent of weed seed, mainly sorrel. In 6 pounds used to plant an acre, there were no less than 700,000 weed seeds. Crushed and dyed quartz is also used as an adulterant. In view of these facts, the paper warns farmers to be careful in their purchases of American clover seed. As the United States exported in the last nine months over 130,000 cwt. of such seed, valued at £2 6s. per cwt., the consul thinks the Department should be informed upon the matter."

As Toledo is known to be the largest clover-seed market in the world, the trade here is interested in setting right before the world the charges with regard to this adulteration.

There is no such thing as adulterated clover seed. Any other seed mixed with clover seed shows itself plainly. All clover seed in this market is inspected and weighed by the authorized inspector and weigher of the exchange. The leading grades are known as choice and prime, and are unrivaled for their purity and cleanliness.

Last year, there was an unusually large foreign demand for clover seed; the price was high; competition was active. Under this condition of affairs, there was a sharp demand for low-grade seed. England, France, and Germany at the end of the season bought a large quantity of what is known as tailings. This quality of clover seed is the cleanings and screenings from good seed. It is full of impurities, and is uniformly sold on its merits and only by sample. While there was a large quantity of this quality of seed sold for foreign account by the trade here last year, it was sold by sample, which clearly represented its quality. Its inferiority, impurities, foul seed, and dirt were all plainly discernable. There was no attempt at deception in the quality of this seed. Therefore, the charge of adulteration is unfounded.

English buyers took only a small amount of this grade of seed, while Germany and France took the remainder, and they knew just what they were purchasing. It is apparent that Consul Campbell's charge\* has been made without investigation. It is quite as unfair as it is unreasonable. Therefore, be it resolved that a copy of this statement be forwarded to the State Department at Washington.

F. O. PADDOCK,

*President.*

DENISON B. SMITH,

*Secretary.*

## AMERICAN BEEF IN FRANCE—SUGAR DUTIES

I have the honor to inform the Department of a movement by the agriculturists of this district (department of the North) to bring about certain changes in duties upon agricultural products and other matters. This movement is represented by a delegation, which memorializes the Government through the Minister of Agriculture to this end: It complains of the importation of American beef, and prays that the quarantine laws upon animals may be rigidly enforced; that, in cases where the sanitary authorities detect contagious diseases in cattle, such cattle may be refused entry, or at least shall be subject to a quarantine inspection in the special lazarettos established at the various ports of entry.

They insist upon the danger caused by the establishment of slaughter-houses in the maritime ports, which, they say, have the effect of lowering

\* NOTE BY THE DEPARTMENT.—Consul Campbell made no charge; he simply called attention to the publication, which is reprinted here for the information of the seed trade of the United States.

still further the price of meats on account of the competition thereby created.

They pray for an increase of 7 francs [per 100 kilograms=220.46 pounds] duty upon sugars imported from other than European countries, which will subject sugars to the same duties as those of the latter; for a bounty upon French colonial sugars not only when they enter France, but when exported to other countries; and for a reduction of the tariff upon sugars and molasses employed for feeding live stock.

STEPHEN H. ANGELL,  
*Commercial Agent.*

ROUBAIX, December 7, 1894.

### MODIFICATIONS OF THE ITALIAN TARIFF.

The following modifications were introduced into the revised Italian tariff of 1888 by royal decree dated December 10, 1894, the modifications to take effect immediately:

Articles.	Unit.	Duty.	
		Old.	New.
<b>Sugar:</b>		<i>Lire.*</i>	<i>Lire.*</i>
First class (refined).....	Quintal†..	90.00	99.00
Second class (raw).....	.....do.....	76.75	88.00
(All sugars that present a grade of whiteness superior to the sample No. 30 Dutch, or those that are artificially colored, or those that are mixed with substances calculated to lower the degree of whiteness, are classed as first class.)			
<b>Glucose (solid):</b>			
First class.....	.....do.....	66.00	90.00
Second class.....	.....do.....	50.00	70.00
(Solid glucose that presents a grade of whiteness superior to the sample of sugar No. 30 Dutch.)			
Sweetmeats and preserves, with sugar and honey.....	.....do.....	100.00	125.00
Paraffin (solid).....	.....do.....	10.00	15.00
<b>Cotton:</b>			
In bales.....	.....do.....	Free.	3.00
Wadding.....	.....do.....	6.00	9.00
Grain or wheat.....	Ton.....	50.00	75.00
Barley.....	.....do.....	11.50	45.00
Flour.....	Quintal.....	8.70	12.30
Semolina.....	.....do.....	11.00	15.50
Bran.....	.....do.....	2.75	3.50
Macaroni (Italian paste).....	.....do.....	12.00	16.00
Sea biscuit.....	.....do.....	12.00	16.00
Palm oil and oil of cocoa.....	.....do.....	Free.	4.00
Oil cake.....	.....do.....	Free.	4.00

\* 1 lira=\$0.193.

† 1 quintal=220.46 pounds.

The tare of 12.5 kilograms (27½ pounds) per cent allowed on the wooden case and the two-tin cans containing mineral oils is reduced to 11.5 kilograms (25.3 pounds) per cent.

No. 173—19.

Restitution of the duty paid on the raw material used in the manufacture of cotton threads and tissues shall begin on January 10, 1895, at the rate of 4 lire per quintal for threads and 4.50 lire per quintal for tissues that may be exported.

Raw cotton, heretofore free, as will be noticed from the above table, now pays a duty of 3 lire per quintal.

WALLACE S. JONES,  
*Consul-General.*

ROME, *December 18, 1894.*

## PROPOSED TARIFF CHANGES IN ARGENTINE REPUBLIC.

The customs tariff law for 1895 having been reported to the Chamber of Deputies by the committee to whom it was referred, is now under debate. There is a slight possibility that nothing will be done with it, and that the present law may remain in force another year. This is, however, hardly probable, the rumor owing its existence to the political situation. There seems but little doubt of the passage of the bill practically in the form recommended by the committee of the Chamber of Deputies.

I am glad to inform you that the committee has approved the modifications made by the Government in the tariff commission's bill with relation to agricultural implements and lumber. These changes were reported in my No. 63.\*

I am also pleased to be able to report that the following favorable changes have been made by the committee in two items, viz, farm wagons and fruits or vegetables in tins. They recommend a reduction in the duty on farm wagons from 60 per cent (present duty) and 50 per cent (tariff commission's recommendation) to 10 per cent. On canned fruits and vegetables in tins, they recommend a reduction from 30 cents specific tax per kilogram (present duty) and 15 cents (tariff commission's report) to 3 cents per kilogram.

Should the bill pass with these changes, our manufacturers will have open to the last two lines of goods practically a new market, which they should at once take advantage of. While it is true that in farm wagons we have little, if any, competition, it should be remembered that in canned fruits and vegetables France will be an active competitor. I am, however, well satisfied

\*According to Minister Buchanan's No. 63, the duty on agricultural implements remains unchanged, notwithstanding the efforts for its increase. The changes in the duties on lumber are as follows, per cubic meter:

Kinds.	Old duties.		New duties.	
	Rate.	Value.	Rate.	Value.
	<i>Per cent.</i>		<i>Per cent.</i>	
White pine.....	5	\$0. 45	15	\$0. 35
Spruce.....	5	45	15	25
Pitch, or yellow pine.....	35	50	15	30

of the superiority of our canned goods, both in quality and variety, and of the ability of our packers, under normal conditions, to successfully compete with other countries. I shall be greatly disappointed in the event of the passage of the bill if our manufacturers interested in these two lines do not find here a new and profitable market.

WILLIAM I. BUCHANAN,

*Minister.*

BUENOS AYRES, *November 19, 1894.*

## TAXATION AND BUSINESS IN PERU.

I have the honor to inform the Department that a decree has been issued ordering the payment, on or before the 14th of the present month, of the house tax, and of the trade and professional licenses, for the first half of 1895, and inflicting a penalty of 25 per cent for nonpayment.

By supreme decree, under authority of the act of Congress of the 26th of October last, it has been determined to raise funds for the public service by the issuance of bonds, in denominations of 10, 20, 50, 100, and 500 soles,\* payable to bearer, to the amount of 500,000 soles, to be considered as a debt of the State, to bear interest at 10 per cent per annum, and after January 1, 1895, to be received in all the custom-houses of the Republic in the proportion of 10 per cent of the amount paid in, etc.

Business continues to be depressed. Communication with the interior and with certain parts of the north and south coasts has been suspended. The usual crops have not been planted, and it is greatly feared that, on account of scarcity of food products and articles of prime necessity, the condition of the poorer classes will become worse than has been heretofore known in Peru.

I was informed to-day that the firm of Americans—Messrs. Backus & Johnston—who own the largest silver smelting works in Peru (and with one exception in all South America), have been forced to suspend operations for lack of fuel. This immense mining property, in which over 1,000,000 soles are invested, is located at Casapalca, on the Oroya Railroad, within the lines of the revolutionary army. The company had on hand a considerable supply of fuel, but it has been taken possession of by the revolutionary forces for use on the locomotives, on that portion of the Oroya Railroad within their control.

J. A. MCKENZIE,

*Minister.*

LIMA, *December 27, 1894.*

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\* The silver sol was valued by the United States Treasury Department on January 1, 1895, at 45½ cents.

## NOTES.

**Shipping Charges in Persian Ports.**—Vice-Consul-General Tyler, of Teheran, under date of August 15, supplies the following information relative to shipping charges in Persian ports:

With the exception of Enzelli, the port of Resht on the Caspian, where there is a wharf of very primitive construction for vessels of light draft, none of the ports, either in the north or south, have yet been provided with wharves or docks, either for the convenience or unloading, or, in case of necessity, making repairs to the ship.

In each locality, viz, Astera, Enzelli, Meshedi Sar, and Astrabad, on the Caspian, and Lingah, Bender Abbass, and Bushire, on the Persian Gulf, vessels have to anchor outside in the open roadstead.

On the Caspian, in consequence of a large bar or belt of submerged sand running along the whole southern coast, every description of craft has to stand about 2 or 3 miles out to sea; in the Persian Gulf, the distance varies from 1 to 3 miles. In each case, goods are brought ashore in native boats or lighters.

As the Caspian is practically a Russian lake, and, on account of the prohibitive transit duties levied on all western goods passing through Russia en route for Persia, it is but rarely used by European merchants for the importation of their wares into Persia.

A small duty of about 5 cents, called "hak-ibenderi" (port dues), is levied on each case, bale, or bundle of merchandise of whatever nature exported from the country (by the Caspian). As, however, all taxes and customs in connection with the export and import of goods are generally let to farmers, who do not, as a rule, exercise a careful supervision, the payment of the exact amount is often evaded.

In regard to the customs or regulations in force on the Persian Gulf, Mr. Malcolm, the consular agent of the United States at Bushire, says "that, with the sole exception of a charge for pilotage at the rate of  $1\frac{1}{2}$  kran (15 cents) per foot at Bushire, and without any distinction of nationality, no taxes, dues, or rates in any shape or form are levied on shipping in any of the ports of the Persian Gulf. Two-thirds of the fee for pilotage are appropriated by the pilot himself, and one-third goes to the private purse of the governor of Bushire. Vessels proceeding to Busrah (Turkey) invariably carry a river pilot from Bushire, and the official fee is fixed at the rate of 15 krans per foot (\$1.50). The pilots are natives of the island of Carrack and under the jurisdiction of the chief of Bunder Reeg, who pays the pilot 100 krans (\$10) per vessel, reserving the balance for himself. Lately, however, a private arrangement has been made between the chief of the pilots and the shipping agents for the payment of 300 krans (\$30) per vessel, irrespective of draft.

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**Greek Budget for 1895.**—Under date of December 8, 1894, Consul-General Alexander, of Athens, transmits a copy of the budget for 1895, as submitted to the Boulé (legislative chamber of Greece) by Prime Minister Tricoupis. It is not thought that the budget will be materially altered by the Boulé.

Receipts: From taxes on consumption, direct taxes, duties, monopolies, income from public property, sale of public property, recovery from expenditures, sundry receipts, lighthouse dues, telegraphs, elementary educational

receipts, public and extraordinary receipts, \$17,626,906, an increase of \$1,077,220 over the preceding year.

Expenditures: (a) Obligations—interest on public debt, subsidies, pensions, civil list (royal family), legislative body, \$5,608,481; (b) general service—ministers of foreign office, justice, interior, religion and education, war, marine, and finance, \$9,585,829; (c) administration and collection of public revenue, \$1,804,431; (d) sundries—reimbursements, judicial indemnifications, \$400,282; total expenditures, \$17,399,023, an increase of \$161,728 over the preceding year.

Puerto Rico Trade Statistics.—Consul Hall, of San Juan, reports, December 17, 1894, as follows relative to his failure to keep the Department informed upon the trade of Puerto Rico:

No statistics of trade and commerce with the United States and other countries, or of the internal affairs of this island, have been sent from this consulate to the Department, because the annual publication of these statistics is now in arrears for the past three years. The last official publication of such matter was in 1893, and then only for the year 1891.

Trade of Mozambique.—The following statistics of the foreign trade of the principal ports in the colony of Mozambique for the six months ending June 30, 1894, are taken from a report transmitted to the Department, under date of November 23, 1894, by Consul Hollis:

From and to—	Imports.		Exports.	
	Value.	Duties.	Value.	Duties.
<i>At Lourenco Marques.</i>				
Portuguese dependencies.....	\$126,783	\$5,716		
All foreign countries.....	431,445	132,438	\$124,458	\$171
Total.....	558,228	138,154	124,458	171
<i>In transit to South African Republic.</i>				
Portuguese dependencies.....	\$1,836	\$7		
All foreign countries.....	1,279,540	13,837		
Total transit.....	1,281,376	13,844		
<i>At Mozambique.</i>				
Portuguese dependencies.....	\$46,125	\$2,402	\$105,538	\$2,755
Foreign countries.....	218,975	108,326		
Total.....	265,100	110,728	105,538	2,755
<i>At Kiliman and Chinde.</i>				
Portuguese possessions.....	\$35,147	\$2,362	\$217,010	\$10,505
Foreign countries.....	226,647	72,576		
Total.....	261,794	74,938	217,010	10,505
Total.....	\$1,085,122	\$323,820	\$447,006	\$13,431
Transit trade.....	1,281,137	13,844		
Grand total.....	2,366,259	337,664	447,006	13,431

**Hankow Tea Statistics.**—In a circular issued by the Hankow General Chamber of Commerce, dated November 5, 1894, and transmitted to the Department, by Consul Child, the following statistics are given relative to the tea business at that port:

Description.	1893.	1894.
<b>Hankow tea :</b>	<i>Half chests.</i>	<i>Half chests.</i>
Settlements.....	586,010	631,083
Shipments to Shanghai on native account.....	86,224	77,320
Stock.....	10,273	8,967
Total arrivals.....	682,507	717,370
<b>Kiukiang tea :</b>		
Settlements.....	245,502	238,813
Shipments to Shanghai on native account.....	7,698	13,739
Total arrivals.....	253,200	252,552
<b>Total business to date :</b>		
For London and America.....	256,000	218,292
Russia.....	575,512	651,604
Total.....	831,512	869,896

**Exports of Sulphur from Sicily.**—Consul Seymour, of Palermo, under date of December 3, supplies the following statistics relative to sulphur exports from Sicily during the four months ending October 31, for the years 1890, 1891, 1892, 1893, and 1894:

Four months of—	To United States.	Total exports.
	<i>Tons.</i>	<i>Tons.</i>
1890.....	35,762	82,857
1891.....	30,565	82,855
1892.....	25,306	74,917
1893.....	17,499	78,073
1894.....	39,760	95,022
Total.....	148,892	413,724

Consul Seymour gives the stock on hand on October 31 of each year, and the prices on December 31 of each year, as follows:

Year.	Stock on hand.	Price per ton.	
		Best seconds.	Best thirds.
	<i>Tons.</i>		
1890.....	112,506	\$20.90	\$20.10
1891.....	116,246	23.00	21.95
1892.....	161,630	15.10	14.25
1893.....	175,317	12.85	12.00
1894.....	191,513	12.00	10.35

A report from Consul Brühl, dated at Catania (November 17), gives the exports of sulphur from that port for the months of August and September, 1894, as follows:

Whither exported.	August.	September.
	<i>Tons.</i>	<i>Tons.</i>
Italian coast ports.....	398	465
United States (New Orleans).....		744
All other countries.....	3,268	4,222
Total.....	3,666	5,431

These quantities are included in the returns given for all Sicily by Consul Seymour.

**Lemon Crop of Sicily.**—Under date of December 3, Consul Seymour, of Palermo, reports as follows:

In this consular district, the lemons are unusually small for this time of the year. The crop is considered to be between one-half and two-thirds normal, but it is very improbable that this will affect the prices in the least, since the production each year far exceeds the demand.

**European Railways.**—Under date of December 15, Vice-Commercial Agent Murphy transmits the following translation, from *L'Indépendance-Luxembourgeoise*, of December 11, relative to the length of the various railway systems of Europe:

Country.	Length of system.	Length per 10,000 inhabitants.	Length per square myriameter of area.*
	<i>Miles.</i>	<i>Miles.</i>	<i>Miles.</i>
Germany.....	27,854	5.53	5.16
Austria-Hungary.....	18,119	4.16	2.67
Belgium.....	3,402	5.47	11.56
Denmark.....	1,386	6.03	3.54
Spain.....	7,103	4.04	1.36
Great Britain and Ireland.....	20,611	5.47	6.52
France.....	24,455	6.4	4.59
Greece.....	569	2.6	0.87
Italy.....	8,814	2.8	3.04
Norway.....	1,002	1.93	0.31
Holland and Luxemburg.....	1,924	3.97	5.4
Portugal.....	1,454	3.11	1.55
Roumania.....	1,599	3.35	1.24
Russia and Finland.....	20,785	2.05	0.37
Servia.....	336	1.49	0.68
Sweden.....	5,457	11.37	1.12
Switzerland.....	2,195	7.2	5.28
Turkey, Bulgaria, and Roumelia.....	1,130	1.24	0.43
Malta, Jersey, and Man.....	68	2.11	6.21
Total.....	148,264	4.04	1.49

\* 1 square myriameter=38.6 square miles.



**Water and the Glossiness of Silk.**—Consul-General Jones, of Rome, reports November 11 that, while the quality of the cocoons is of importance, the glossiness of silk is due to the water in which they are boiled, and he desires to call the attention of the silk manufacturers of the United States to this fact, which has recently been verified by researches and investigations made by the Russian Technical Society, in the silk-growing district south of the Cansasas, the water there containing carbonate of lime. In boiling the cocoons, in this district, the water, which is changed but seldom, evaporates, and the mineral matter contained therein, becoming condensed, acts upon the silk, destroying its glossiness and making it stiff and hard. It is not sufficient to collect this water in reservoirs, adds the Russian report, and expose it to the atmosphere for several days; it must be boiled and drawn off before being used to cook the cocoons.

**Swiss Hotel Industry.**—Under date of October 19, Consul Germain, of Zurich, transmits some statistics, prepared by the Swiss Union of Hotel Keepers, which are of interest as showing the very large amount of money invested in that country, principally in hotels for the accommodation of tourists and travelers. In 1894, there were 1,393 hotels in Switzerland, patronized mostly by travelers and tourists. The value of these hotels is given as follows: Buildings, \$74,474,830; furniture and fixtures, \$22,539,140; total, \$97,013,970. To this is added for supplies and working capital, \$1,856,600. Of the 79,255 beds in Swiss hotels, 52,315 are in hotels open for traffic the whole year and 26,950 in summer hotels, which are closed during the winter months. Taking the whole traffic, it is shown that the hotels were patronized by 7,779,325 persons, an average of 98 persons per bed. Applying figures to the proper (summer) season, all the beds are occupied for 175 days, showing that the Swiss hotels are fully occupied six months in the year. The nationalities of tourists in 1893—a very dull year—is given as follows: Germans, 24.9 per cent; English and Americans, 24.64 per cent; French, 11.61 per cent; Italians, 2.92 per cent; Belgians and Hollanders, 1.65 per cent; other nationalities, 7.9 per cent. The daily charges at the hotels are given at from 80 cents to \$4.20. The annual receipts, estimating the average daily charge at \$2.50, is given, in round numbers, as amounting to \$19,450,000. About 45 per cent of the receipts is spent for food and other necessary articles. The wages paid to the employees in tourist hotels amounted to \$1,860,000, or about \$72 per capita in 1893. The total expenses for employees in all hotels amounted to \$3,412,800; taxes, \$384,000; advertising, \$279,200. The total hotel expenses amounted to \$12,908,400, leaving a gross profit of \$6,719,200 to cover interest, insurance, repairs, redemption fund, etc., and net profits. The latter, in the opinion of Consul Germain, must be conceded as very modest.

**Barmaids and Saloons in Switzerland.**—Under date of December 25, Consul Germain, of Zurich, reports that the women societies of the Canton of Zurich—Labor Union, Confederation for the Elevation of Women, Woman's Rights Protective Union, Martha Union, Friends of Young Girls, Swiss Union for Educational Reforms—have petitioned the cantonal council for the adoption of measures for the protection of barmaids, and for general restrictive measures against public drinking places, viz: That girls under 26 years be debarred from following the occupation of barmaids, waitresses, etc., in public resorts; that they shall not work after 11 o'clock p. m.; that they must be allowed eight hours of uninterrupted rest, and a vacation of six uninterrupted hours per week, and that on Sundays they shall begin work at 11 o'clock a. m. only.

In order to protect certain family interests, these societies further ask that persons under 16 years of age be prohibited from visiting public resorts without parental escort, and that the sale of alcoholic beverages to such persons even for home consumption must be prohibited; no licenses must be granted to public dance houses, except for stipulated days; public saloons must be closed after certain hours; the number of public drinking places must be reduced, etc.

The league of women societies indorse the demand of the association of saloon keepers, viz: That there shall not be more than one saloon to every 200 inhabitants, and that licenses shall be given only to men who have resided from 2 to 3 years in the place where they want to carry on the business.

The league, in recounting the evil results of too many drinking places, states that there is in the Canton of Zurich at present one public drinking place for every 20 inhabitants, and that in the city of Zurich, with a population of 122,000, there are 1,300 public saloons, including hotels, cafés, etc., and that there are quarters in Zurich where there is a saloon in about every house. Such has been the increase of saloons in Switzerland that the authorities have stopped issuing licenses in Canton Schaffhausen, and the same has been done in Stuttgart and Heilbron, in Germany.

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**Swiss Exposition in 1895.**—The United States consul at Zurich informs the Department that a federal exposition will be opened in Geneva on May 1, 1895, at which our producers and manufacturers may exhibit and thus give the Swiss people an opportunity to compare American goods with those of other countries. The consul says that American trade can be greatly enlarged in Switzerland if our manufacturers and producers will only deal directly with the Swiss people. At present, nearly all the American products consumed in Switzerland are introduced into that country through the medium of English, German, and Belgian houses. This information was given to the press on December 22.

**Swiss Federal Bank.**—Consul Germain, of Zurich, under date of November 17, 1894, reports that the Swiss Federal Council has framed the necessary laws for the establishment of the Swiss Federal Bank, and published, on November 6, a draft of the same, which is composed of fifty-four articles, covering: (1) general rules; (2) transactions of the bank; (3) emission, redemption, and security of the notes of the bank; (4) accounts, net profits, reserve fund, and publications; (5) administration; (6) supervision through the Federal Assembly. The laws have been framed in conformity with a vote of the Swiss people (231,578 for and 158,615 against), on October 18, 1891, on the revision of article 39 of the federal constitution, so as to read:

The Confederation of Switzerland shall have the exclusive power to issue bank notes. In order to exercise this exclusive privilege, the Confederation shall have the power to establish an institution called the Federal Bank of Switzerland, which shall be operated under a special management, or with the necessary redemption reservations to convey the same to a central stock company, which shall run said bank under the direct supervision of the federal authorities. The principal object of this bank shall be to have the sole privilege to issue bank notes so as to regulate the monetary circulation of the country and facilitate the modes of payment.

The cantons shall receive at least two-thirds of the net profits of said bank, after suitable dividends have been paid to stockholders and a stipulated sum versed into the reserve fund.

The bank, as well as its branches, shall never be subject to cantonal taxation.

The Confederation shall, however, have no power to compel the Swiss people to accept its bank notes as legal tender, except that in case of war such compulsion should prove necessary.

The federal authorities shall enact laws in conformity with the foregoing article, naming the principal place of business of such bank, regulating its management and organization, as well as see to the proper execution of the above article.

The laws referred to provide that the Swiss Confederation establish the bank, to be run under a separate management, and to which it grants the exclusive privilege to issue bank notes, Berne to be the principal place of business. The capital stock, to be provided through the Confederation, has been fixed at 25,000,000 francs (\$4,825,000), which can be increased by permission of the Federal Assembly to 50,000,000 francs (\$9,650,000). At least one-third of the circulation shall be secured in current coins or gold bars, estimated at market value, or by foreign current gold coins; the bank must hold sufficient good Swiss and foreign commercial notes to secure its circulation and ten-day liabilities; 15 per cent of the net profits shall be versed in the reserve fund, and of the remaining net profits a dividend of 4 per cent of the capital stock shall be paid to the Confederation, and of the remaining balance one-third shall also go to the Confederation and two-thirds to the cantons.

The laws framed by the Federal Council, covering fifty-four articles and making provision for all contingencies, will have to be submitted for approval to the Federal Assembly and to the Swiss electors for final acceptance.

**Budget of Zurich.**—Under date of November 21, 1894, Consul Germain transmitted to the Department a translation of the budget of the city of Zurich for the year 1893, from which the following extract has been made:

Description.	Receipts.	Expenditures.
Deficit of 1894.....		\$11,136.10
Municipality.....	\$77.20	482.50
City grand council.....	19.30	3,300.30
City council (executive, president, and 8 members).....	10,130.50	24,279.40
Administrative departments.....		41,475.70
City president's department.....	19,936.90	332,216.80
Finance.....	203,480.90	13,683.70
Tax collector.....	892,451.30	81,407.40
Police.....	25,070.70	119,315.20
Health.....	74,806.80	361,662.70
Building.....	162,737.60	336,669.20
Education.....	108,774.80	6,828.20
Probate court.....	1,930.00	2,238.80
Communal property.....		617.60
Notaries public.....	48,578.10	22,598.10
Sundries.....		12,081.80
Deficit of 1895.....	9,997.40	
Total.....	1,557,993.50	1,557,993.50
Extraordinary.....	\$293,939.00	\$371,139.00

**Railroad Building in Salvador.**—Vice-Consul Dawson writes from San Salvador December 28, 1894:

The Scherzer-Kelly contract to build the railroad from Ateos to Santa Ana and from La Ceiba to the city of San Salvador, drawn during the Ezeta administration, has been ratified by the Provisional Government. The road will pass by the way of San Andres, Quezaltepeque, and Nejapa, and will reach this city without touching at Santa Fecla. It is stated that within eighteen months the two lines will be finished, and this capital will then be connected by rail with Acajutla and Santa Ana.

**Pacific Mail Steamship Contracts.**—Minister Young writes from Guatemala City, December 6, 1894:

A few weeks ago, the contract between the Pacific Mail Steamship Company and the Government of Guatemala expired. The Guatemalan Government seemed disposed not to enter into another agreement with the steamship company, but through the management of the company's general agent, Mr. W. P. Tisdell, now here, a contract for five years has been negotiated and signed by the Government of Guatemala and the Pacific Mail Steamship Company, by which the company enjoys greater powers and more extensive privileges than it has been able to obtain heretofore. This event is of great importance to the commerce between the United States and the Central American republics. For more than a quarter of a century, the company has done most all the carrying trade between the United States and the republics on the Pacific Ocean, and much of the progress of these countries during the last twenty-five years is due to it. It is to be hoped that under the present management of this great

corporation, a new impetus will be given to the commerce between the United States and the republics of Central America.

Vice-Consul Dawson writes from San Salvador December 28, 1894:

Regarding the new port of El Friunfo, I beg to inform you that the Provisional Government of Salvador has made a new arrangement with the Pacific Mail Steamship Company in order to have the steamers belonging to the same touch with regularity at the said port during the coffee season. I have been told by Mr. George F. Thompson, one of the owners of the concession, that 25,000 sacks of coffee will probably be shipped from that port during this season.

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**Mexico-Texas Railway Bonus.**—In a report dated January 1, from Consul Gorman, at Matamoros, the Department is informed that the bonus of \$160,000 offered by Brownsville, Tex., to the first company building a railway from that point to Corpus Christi or to San Antonio is still available. Either of these lines would greatly facilitate trade between the United States and Mexico. The movement by Baltimore capital for the deepening of the harbor at Aransas Pass will, adds the consul, insure the building of the railway, now surveyed, to Brownsville.

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**Change in British Postal Rates.**—Under date of January 5, Consul-General Collins transmits to the Department an extract from the London Times, which states that from January 1, all postal redirection charges of the British post-office service, save for parcels, have been abolished. "In other words, a letter, post card, book packet, sample, or newspaper, will follow the person to whom it is addressed, from one place to another, at the expense of the country, and not at that of the addressee."

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**Postal Treaty between Mexico and Germany.**—Mr. E. C. Butler, secretary of legation at Mexico, informs the Department, under date of December 29, that the Government of Mexico and the German minister to Mexico signed a convention November 21, 1894, which was promulgated December 21, relating to transmission between Mexico and Germany of postal packages without declared value. The new treaty establishes the following rates:

(1) The postage on packages from Mexico to Germany, or vice versa, shall be collected in its totality, in stamps of the country from which the package starts, in the following proportion:

For each package sent from Mexico to Germany, and weighing up to 5 kilograms, 60 cents in Mexican currency.

For each package sent from Germany to Mexico, and weighing up to 5 kilograms, 2.40 marks.

From the rate, whatever may be the point of starting, there shall accrue as follows: To Mexico, 10 cents, or 40 pfennigs; maritime charges, 40 cents, or 1.60 marks; to Germany, 10 cents, or 40 pfennigs; total, 60 cents, or 2.40 marks.

**The Cotton Worm in Mexico.**—The following extract, regarding the cotton worm in Mexico, is taken from a report made to the Department by Consul Gorman, of Matamoros, under date of January 1:

The production of cotton is decreasing in consequence of drought during the last few years and a new enemy which has recently made its appearance—a small dark worm called “poplotes” (sharpshooters), evidently very destructive to the bolls.

**Rice Exports from Saigon.**—Commercial Agent Schneegans, of Saigon, reports to the Department December 1, 1894, that the exports of rice from January 1 to December 1, 1894, amounted to 553,998 tons of 1,000 kilograms, as compared with 626,729 tons during the corresponding period of 1893.

**Hotel Exhibition at Amsterdam.**—In CONSULAR REPORTS No. 172 (January, 1895), p. 96, the paragraph side-headed “grounds and buildings,” reads as follows:

The area of the exhibition grounds is 160,000 square meters (524,933 square feet), that of the buildings 30,000 square meters (98,430 square feet).

The reductions were made for “running,” instead of “square,” meters, and should read “(1,731,314 square feet)” and “(322,752 square feet),” respectively, the square meter being equal to 10.7584 square feet.

**Consular Reports Transmitted to Other Departments.**—The following reports (originals or copies) were transmitted during the month of January to other Departments for publication, or for proper action thereon:

Consular officer reporting.	Date.	Subject.	Department to which referred.
Eugene Germain, Zurich.....	Dec. 7, 1894	Imports of domestic animals into Switzerland.	Department of Agriculture.
Do.....	Dec. 6, 1894	Organization of Swiss army....	War Department.
L. M. Shaffer, Stratford.....	Dec. 31, 1894	Agriculture.....	Department of Agriculture.
Julius Muth, Magdeburg.....	Dec. 12, 1894	Expenses of putting sugar free on board in Hamburg.	Treasury Department.
S. E. Morss, Paris. .. A. ....	Nov. 30, 1894	Apple crop of France.....	Department of Agriculture.
Do.....	Dec. 1, 1894	.....do.....	Do.
Do.....	Dec. 5, 1894	.....do.....	Do.
E. Schneegans, Saigon.....	Nov. 17, 1894	Rice market.....	Do.
Do.....	Dec. 1, 1894	.....do.....	Do.
Charles de Kay, Berlin .. .	Jan. 4, 1895	Public granaries in Germany.	Do.
G. H. Murphy, Luxemburg. .	Jan. 2, 1895	Price of cattle in Luxemburg...	Do.

**Consular Reports Reprinted Abroad.**—The British Board of Trade Journal for January, 1895, contains the following reports reprinted from CONSULAR REPORTS: On page 38, part of "Mining Industries of Australasia," by Consul-General Maratta, of Melbourne, being extracts from a report of the Government geologist upon the conditions of gold mining in Victoria, pp. 406-407 CONSULAR REPORTS No. 170 (November, 1894); on page 90, "A New Railway in Colombia," by Consul Smyth, of Cartagena, p. 416, CONSULAR REPORTS No. 170; and on page 91, "Proposed Railroad in Venezuela," by Consul Plumacher, of Maracaibo, p. 418, CONSULAR REPORTS No. 170.

## FOREIGN REPORTS AND PUBLICATIONS.

**Commercial Museums Abroad.**—According to the *Revue du Commerce Extérieur* (Review of Foreign Commerce), of Paris, Mr. Henri Blancheville, who was sent on a mission to England, Belgium, Germany, Austria-Hungary, and Switzerland for the purpose of studying commercial museums and other institutions tending to favor the development of the export trade of those countries, has addressed to the French Minister of Commerce, Manufactures, Posts, and Telegraphs a report in which he says:

The commercial crisis is general; it is felt not only in France, but in all producing countries, whatever may be the economical system adopted by them. England's free trade has not escaped it more than the protectionist system where it prevails in other countries. This crisis does not date from the present time; it has existed for several years. This is why manufactures and commerce have, for a long time, sought means to combat it by extending the field of commercial activity, and by seeking new outlets for national products. Of these means, the sending of representatives, the creation of depots or countinghouses in foreign countries, etc., have been attempted one after another. Later, it was thought that to establish commercial museums would guide manufacturers as to the taste and needs of consuming countries, and would contribute to the direct purchase by these countries from the producing countries. Hence, the origin of these museums in Belgium, Germany, Austria-Hungary, and England. This idea seems to have made its way and enlisted partisans. England proposes to extend it; Italy is about to establish a commercial museum; even Turkey desires to enter into the movement, and a recent "iradé" has settled the bases of a museum of commercial exports.

These various establishments, designated by the general appellation of commercial museums, are constituted upon different principles, but all tending to the same object; their proceedings vary and their origin is not less dissimilar; some expect or summon their custom from abroad, others go to find it; some endeavor to direct or instruct the national manufactures, others indicate to purchasers what the country is ready to furnish them; some are official projects, others are private enterprises, and some partake of both characters.

It is these varieties that it is necessary to study and bring to light, setting forth as far as possible the advantages and defects of each kind of institution.

*Belgium.*—With reference to the commercial museum at Brussels, Belgium, Mr. Blancheville says:

The commercial museum of Brussels has been in existence about eight years. It occupies the whole of a vast building which belongs to the Government. The personnel forms a part of the Department of Foreign Affairs to which commercial matters belong. One department, that of transportation, is entirely under the direction of the Ministry of Railroads.

The primary aim of the museum was to collect and centralizewsamples of merchandise sold in foreign markets by competing countries, and to place these samples at the disposition of Belgian producers who would desire to have their manufactures conform to the exigencies of foreign markets. Moreover, they bore the indication of their origin, of their wholesale purchase price, with the necessary costs (transportation, insurance, customs duties, etc.), the man-



ner of packing, the retail price of sale, the average quantity sold in the market, and the name and address of the native merchants holding the article.

The museum was also to receive patterns of original materials of foreign produce, the direct purchase of which by Belgian manufacturers might offer an advantage, instead of having recourse to the intermediate markets of Europe in England, Germany, and France. It even collected cereals from the Balkans, intended to compete with similar products of other countries of Europe or of the United States. This last acquisition had no success, for it is not in a museum, of whatever kind, that a speculator or even a purchaser will look for information respecting the qualities of cereals.

These various samples of raw materials, as well as of manufactured articles, were sent to the museum by the agents of the Belgian consular corps, to whom the costs were reimbursed.

Several halls of the museum are devoted to these collections of samples, which, nevertheless, as may be seen later, have lost in importance and seem by degrees and through experience to have become but the accessory portion of the institution of which originally they were to form the principal and almost the only part, while departments accessory in the beginning or created later have grown in importance and seem likely to occupy the chief place.

It was not long before this collection of samples was completed by a department of information. This information relates to the greatest variety of subjects and embraces all countries; statistics of the imports and exports of foreign countries; their present financial and commercial condition; their needs, their commercial usages, methods of payment, credits, rates of exchange, ways and means of transportation, customs tariffs, and different expenses; principal commercial houses, whether according to the lists furnished by the consuls or according to the national annual reports—such is the character of the information asked for. This department has been greatly expanded and now furnishes information to nearly half of the visitors to the museum.

Trade can not generally of itself be informed regarding all important works to be executed abroad; it requires to be kept informed by the public departments which, at the same time, will supply the estimates, designs, and types of works or materials to take in hand. This is why one of the sections of the Brussels museum is devoted to contracts ("adjudications"), as much for the departments of the Belgian Government (railroads, bridges, and causeways, posts, telegraphs, public works, hospitals, and prisons) as of foreign governments. The section holds at the disposal of those who are interested the estimates and other information useful in bids for contracts. These statements emanate from the consuls, who have received from the Department of Foreign Affairs especial and strict instructions on the subject. This part of the department of the museum is highly appreciated by the public, and attracts one-fourth of the visitors.

Another branch of the department not less appreciated concerns transportation, especially transportation by sea. This section is not strictly a part of the museum; it was annexed to it for the convenience of the public, which is thus spared fatiguing rounds, and finds collected in one locality all the information needed. This section, including personnel and expenditures, is connected with the Ministry of Railroads. It furnishes, either immediately or in two or three days, the information asked for as to the means of transportation, freights, shipping lines, etc., from a Belgian port to one in any part of the globe. When the required information is not at hand, application is made to shipping companies of Antwerp, who supply it by return of post. The applications are numerous and come from abroad—even from France—and are always answered. The section for transportation can also reckon upon one-fourth of the daily visitors. Let us add that, from whatever section information is furnished, it is given gratuitously by the museum, the personnel of which endeavors to satisfy every inquiry addressed to it.

For the operation of these various departments, besides the sample halls spoken of above, which are free of access, the museum possesses a certain number of bureaux belonging to the departments enumerated, to which visitors are referred. The visitors are regis-

tered as soon as they enter a particular department. In each of these bureaux, are one or more clerks to furnish the explanations called for.

Finally, the museum has a library reading hall, where one can study from 9.30 o'clock to noon and from 2 to 5 o'clock. This hall contains the Belgian newspapers, statistical documents from different countries, and address books. The library seems quite solidly furnished, but, owing to a want of sufficient means, it can not procure certain works of high price.

These are the official figures of daily visits to the museum, as shown by the report transmitted to the Ministry of Foreign Affairs, for the month of October :

For various information.....	48
For information as to contracts.....	26
For information as to transportation.....	25
Total .....	99

The personnel of the museum (not comprising that of the transportation section), includes one director, one chief clerk, two ordinary clerks, three subaltern employees, and four bureau messengers, or museum watchmen. These are paid out of the funds of the Ministry of Foreign Affairs. The three employees of the section of Transportation are paid by the Ministry of Railroads.

The properly styled budget of the administration of the museum only amounts to 20,000 francs [\$3,860], supplied by the Government. This credit has to suffice for the general expenses, such as heating, the minor costs of repairs, the purchase of documents and subscription to newspapers, the purchase and renewal of samples, and publication of catalogue. It is manifestly insufficient, and to keep up the library already absorbs a large portion of the sum allotted.

The purchase of samples enters but little into the ordinary expenses. The administration of the museum does not think this the most important part of the department. It is very difficult to procure every season fresh samples or patterns of woven textures, for example. When these patterns reach the museum, they are no longer the fashion, and to make a complete sampling with all the indications allowable would require a capacity not to be expected from the consuls. Besides, the expense would be considerable, for one firm spends every year for its own personal use much larger sums than the entire budget of the museum.

The administration of the museum limits itself to collecting general types, little susceptible of modification, leaving to each person the task of completing the more special information. It accepts what the consuls or correspondents send it, but attaches greater worth to frequent and precise information than to patterns liable to rapid loss in value.

There is another source of revenue to the museum, which at the same time is complementary to its different departments; it is the weekly journal *Bulletin du Musée Commercial* (Bulletin of the Commercial Museum). Its sole claim is its being, in a manner, the prospectus of the museum, and it is edited by the personnel of the institution. The amount of subscriptions and advertisements add to the official credit and covers certain internal expenses.

On the whole, the Commercial Museum of Brussels exists and prospers rather through the annexed departments created later by it than through the section of samples or patterns. The term "museum" is therefore incorrect; it is rather a bureau of information, sufficiently supplied, and, in short, it is this information of different kinds that the industrial and commercial world of Belgium seems to value.

*Germany.*—Mr. Blancheville's report upon the commercial museums of Germany is, in substance, as follows:

Germany entered early into the plan of commercial or trade museums, but she adopted a twofold system. She created at Frankfort what might be called a museum of instruction, in the style of that at Brussels; at the same time, she organized in different cities of the Empire depots of samples of export products (*Export Musterlager*), which are only sales agencies

with branches in foreign markets. These are of two types, represented by the Commercial Museum at Frankfort and the Depot of Samples at Stuttgart. It will suffice to explain in detail the organization of these two establishments; the others are but branches or copies of them.

The Commercial Museum at Frankfort dates from 1885, and was founded under the auspices of the chamber of commerce and the patronage of the Imperial Government. Its aim is to make the manufacturers and exporters of Germany acquainted with merchandise susceptible of finding a market in countries beyond the sea, as well as with the price, mode of packing, products, various costs and conditions of credit; to bring them face to face with articles sold by other producing nations, and to furnish them with the necessary hints on the subject. With manufactured articles are also joined the original materials, the direct purchase of which might be profitable to German industry. The museum does not pretend to collect samples of all articles from all countries. It confines itself to procuring samples from countries the least known, or novel articles for the fabrication of which Germany may enter into competition. Thus, there are to be found there things sent by consuls from Tien-Tsin, Chefoo, Amoy, Batavia, Valparaiso, Zanzibar, Adelaide, Beirut, Merida, Saint-Jean-de-Terre-Neuve, and Bogotá. Besides these, the Central Society of Commercial Geography at Berlin has given to the museum its collection of samples of natural and manufactured products of South America to complete the collection from distant countries, concerning which information is more necessary. This South American collection was gathered by German consuls, who forwarded a great quantity of articles imported into Montevideo, Buenos Ayres, and other places in that region by England, France, and the United States. These collections are installed in vast galleries of the new Exchange, a place conceded by the Chamber of Commerce. The museum is open every day from 9 in the morning to 1.30 o'clock and later, on special application to the director.

To these sample halls, is annexed a library, open to the public at the hours the museum is usually open. It includes newspapers and publications having reference to export trade proceedings from Germany as well as from foreign countries; customs tariffs, the text of treaties of commerce between different nations, and special reports on industrial or commercial questions. Moreover, the attendants furnish all the information desired.

Annexed is a department which is of great interest to German manufacturers, namely, patents for inventions issued in all countries. In short, the museum receives foreign journals in the style of the *Bulletin de la propriété industrielle*, continuing the list of patents issued in Germany and elsewhere.

It seems that this portion of the department is much esteemed by the public and is most visited. Here, as at Brussels, the samples section occupies only a secondary place with the management of the museum. It is thought to be indispensable to possess such a collection, inasmuch as it shows a general style, a permanent taste, a type belonging to the country; but it is impossible to enter into detail, or to continually renew these collections, especially of articles more or less subject to the variations of fashion. Some articles—hardware, jewelry, foot wear, for instance—are less subject to change, and this class of goods does not need to be often renewed.

Nor can they take advantage of the cooperation of the consuls or too frequently appeal to their kindness, as the museum is not in condition to meet the expenses which the renewal of the collections would involve, so that, at the end of a few years, the museum fatally loses its attraction, because it has always the same articles to show to visitors, and it would be deserted if it did not, from time to time, draw attention to some novel article introduced from a foreign market. It is these new articles that the museum seeks from the consuls. Fortunately, the department of information and the library continue to attract visitors independently of the department of patents, which has the largest patronage.

Information concerning public decisions in foreign countries is not sufficiently complete to constitute a special branch, but the managers of the museum are striving to give it the desired extension.

On the whole, the credit balances are used for the improvement of the existing departments or for the creation of new branches. Still the credit balances at the disposition of the museum are not important, consisting only of the annual subsidy granted by the chamber of commerce, which is not more than 10,000 marks [\$2,380], and in the uncertain cooperation of the city of Frankfort, the rate of which varies, but never amounts to more than 4,000 or 5,000 marks [\$952 to \$1,190]. This maximum sum of 15,000 marks (18,750 francs) [\$3,570] must suffice for all expenses—the personnel and maintenance of material and the collections and library. The Government furnishes gratuitously the documents in its possession. The personnel is limited to four persons, and the heaviest duty is that of the director, who, besides, has another situation.

It has not been possible to learn the exact number of visitors, which is not limited. The director states that the museum is of real service to export manufactures and trade in that region.

The commercial museum of Frankfort has a different and distinct character from that of Brussels. It is official by reason of the patronage of the Government and the part taken in it by the consuls in sending the samples, but it is at the same time private, inasmuch as it depends for its administration and its budget solely upon the chamber of commerce.

Perhaps it might be said that Frankfort is not the center which should have been selected for an institution of this kind. Frankfort is a commercial, and above all, a financial city. The surrounding region is a manufacturing one, especially Hanau and Offenback, but the character of these manufactures (jewelry, chemical products, leather and skins), it may be, does not justify the existence of a central museum, the only one of its kind in Germany.

The subsequent reports of Mr. Blancheville had not appeared in the *Revue du Commerce Extérieur* up to the time of preparing the matter for this number of CONSULAR REPORTS.

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**Tariff Relations of France and Spain.**—The *Revue du Commerce Extérieur* of Paris, of December 29, 1894, says:

Spain is one of the great powers which lent itself most passionately to the movement of protectionist reaction. From the year 1890, under the ministry of M. Canovas, even before the expiration of the treaties of commerce, she raised the duties of a portion of her general tariff. This overcharge naturally arrested the development of foreign importations into Spain. The powers that carry on a great traffic with the peninsula perceived it. Our shipments of horses and mules came down to 9,000,000 francs (\$1,737,000) which for ten years had never been at so low a sum. Those who consult commercial statistics casually might hold the contrary. Apparently, the decree of December 24, 1890, produced no unfavorable effect on the import trade. The total value in 1890 passed from 941,183,000 pesetas (\$181,639,634) to 1,018,000,000 (\$196,474,000)—a deceptive illusion, for, subtracting the entries of precious metals, the veritable importations of those years are reduced to 856,236,000 pesetas and 864,702,000 pesetas (\$165,253,548 and \$166,827,486). The slight excess of value which subsists was even of evil augury, as the treaties of commerce, signed by Spain with foreign powers were about to expire in 1892, the merchants supplied themselves with products manufactured before the end of the year 1892. Meantime, Spain prepared her new economic system. However ingenious, it raised a hue and cry in economic circles. The French free exchangers themselves, went very far; our commerce was so seriously injured that they joined their adversaries in refusing to exchange the two minimum tariffs.

It is remembered that during five months—from February to the end of May, 1892—Spain and France had a tariff war; but it was courteous, and fully showed the character of the two Latin countries. On both sides, use was made only of the two general tariffs, with-

out reference to mutual overcharges, as with northern nations. France and Spain can, in this respect, be cited as setting an example. They fought courteously, as friends separated by a contention of interests. Germany and Russia, to each other or to Spain, have shown a different disposition in identical circumstances. They [France and Spain] ended by coming to an understanding. The *modus vivendi* of May 29, 1893, reestablished commercial peace between the two countries.

But dating from the month of July, the new Spanish tariff went into full force, and in balancing the account there was an effective decrease of 100,000,000 pesetas (\$19,300,000). For her part, France had seen her exportations reduced from 181,000,000 francs to 134,574,000 francs (\$34,933,000 to \$25,972,782). She had paid half of the losses inflicted on international commerce by the new economic legislation of Spain.

The difference between the old and the new tariff régime was so slight that the two powers could not conclude any definitive agreement. In France, public opinion, without any distinction of economic views, found the charges of the Spanish minimum tariffs to be intolerable. On the other hand, Spain still hoped for a modification of the duties collected in France on the Peninsula wines. The French Government had accepted the *modus vivendi* only in consideration of the coming concessions announced by Spain. They were to be inscribed in the commercial treaties negotiated at Madrid with other powers. The most-favored-nation clause virtually comprised in the *modus vivendi* ought to have declared the duties of the Spanish minimum tariff.

At the close of last year, difficulties arose when the commercial accord expired. France had all the more right to complain that the cessation of the tariff war had not improved the situation of our exportation to Spain. During the year 1893, its value was reduced from 134,500,000 francs to 113,797,000 francs (\$25,958,500 to \$21,962,821.) During that year, French commerce had borne nearly half of the decrease of the importation into Spain. The cabinet at Paris acceded to the prorogation of the *modus vivendi* only because of its reliance on the profit from treaties of commerce that Spain had concluded with Norway, Holland, and Switzerland, and, above all, the vast proportions of the treaty already negotiated with Germany. It is known how this project failed.

While the Sagasta ministry endeavored to bring to bear the economic system it had adopted, the protectionist movement became more and more intense on the other side of the mountains. This formidable rush of the spirit of economic reaction is a surprising phenomenon. Sometime ago, the French protectionists themselves might have been astonished at it.

The Spanish customs tariff is so raised that it is difficult to comprehend that it should seem insufficient, especially with the rate of exchange which limits foreign importations. Nevertheless, the movement is not factitious, since a fraction of the Liberal party had to rally to the economic policy of the Conservatives. For us, there is no plausible explanation of it but the continued decline in the price of goods.

But the relinquishment of the policy of commercial treaties altered one of the essential elements of the respective situation of the two countries. While the improvement in our wine harvest inflicted sensible losses on Spanish commerce, the state of the exchange during the greater part of the year annulled the light profit which France could draw from treaties of Spain with Switzerland, Holland, and Norway.

In the course of eleven months of the year 1894, our exportation to Spain again declined 2,356,000 francs (\$454,708), in spite of the improvement which occurred in November. France, then, did not receive the compensation to be derived from the Spanish minimum tariff. This explains the difficulties which oppose the renewal of the *modus vivendi* for the next year.

M. Turrel, the warm defender of wine growing and commercial interests without and within France, is desirous of bringing this situation to the consideration of the courts. His aim is to obtain the realization of the implied promises of the Spanish Government during the first negotiations in regard to the *modus vivendi*. The interpellation of M. Turrel is not dictated by a spirit of hostility toward Spain, it is a measure of defense taken in the interest

of all French commerce. Moreover, to day, as three years ago, the Peninsula is still conjointly responsible with France from an economic point of view. France remains the best and surest market for the agricultural products of Spain. The decrease in importations of wines from beyond the Pyrenees has not modified the general relations of the two nations.

During the eleven months ending November 30, Spain exported to us 159,863,000 francs, (\$30,853,559) worth of various products, including 64,500,000 francs (\$12,448,500) of wine (1,946,773 hectoliters=51,427,802 gallons). Spain would not forfeit this valuable market for insufficient reasons. Therefore, we persist in believing that, thanks to the enlightened sagacity of the Spanish ambassador at Paris, a new *modus vivendi* will be negotiated under conditions equally advantageous to the two Pyrenean nations.

**British Commerce in 1894.**—The returns of the "Trade and Navigation" of Great Britain, for the year ending December 31, 1894, show that the imports from foreign countries and British possessions amounted to £408,505,718 (\$1,987,788,824), against £404,688,178 (\$1,969,212,674), a net increase of £3,817,540 (\$18,576,150). Manufactured articles showed the greatest increase, £3,104,235 (\$15,105,207); live animals for food, next, £2,747,092 (\$13,367,350); raw materials for textile manufactures, £2,615,998 (\$12,729,446); raw materials for sundry industries, £2,102,337 (\$10,229,972). The greatest decrease was in duty-free articles of food and drinks, viz, £4,856,197 (\$23,302,546). In metals, the decrease was £1,556,894 (\$7,575,827).

The exports of British and Irish produce during 1894 amounted to £216,194,239 (\$1,052,001,167) against £218,094,865 (\$1,061,249,613), a net decrease of £1,900,626 (\$9,248,446). The greatest increase was in exports of raw materials, £2,780,728 (\$13,531,022). The exports of "machinery and millwork" showed an increase of £347,579 (\$1,681,587). The greatest decrease was in exports of metals and articles manufactured therefrom (except machinery) £2,791,648 (\$13,554,159). In apparel and articles of personal use, the decrease was £807,784 (\$3,930,678); yarns and textile fabrics, £464,024 (\$2,257,941); chemicals, medicinal preparations, etc., £183,980 (\$895,246).

The exports of foreign and colonial merchandise in 1894 amounted to £57,966,484 (\$282,064,911), against £59,043,405 (\$287,305,209) in 1893, a decrease of £1,076,921 (\$5,240,298).

Description.	Amount.	
Total imports (1894).....	£408,505,718	\$1,987,788,824
Total exports (1894):		
British and Irish.....	£216,194,239	\$1,052,001,167
Foreign and colonial.....	57,966,484	282,064,911
Total.....	274,160,723	1,334,066,078
Excess of imports over exports.....	£134,344,995	\$653,722,746

**Cotton Duties in India.**—The London and China Telegraph of December 24, 1894, says:

The Indian Government has done a logical action in imposing the import duties on cotton goods and yarns imported into India—that is, if there is any logic in a return to duties at all, and the abandonment of the principles of free trade. It is, however, all part and parcel of the currency experiments set on foot by the Herschell committee. Step by step measures have to be taken to bolster up the idea that has so far only alleviated the Budget to a slight extent, and has severely handicapped Indian trade, with its monopoly valued silver tokens, in its trade with the free-silver countries further East. At the same time, a sop is thrown to Lancashire by the fact that an excise duty of 5 per cent is also placed on the Indian manufactures of the finer counts. The low, coarse counts are not taxed in either case. The only effect of this must be to still further benefit the growing cotton spinning industries in China and Japan.

The London Times of December 31 states that a customs duty of 5 per cent has been imposed by the Indian Government upon imported cotton goods and a countervailing excise duty upon certain classes of cotton goods manufactured in India.

**American Railway Securities Abroad.\***—The Glasgow Herald of December 26, 1894, commenting upon the report of United States Consul-General Mason, of Frankfort, upon "American Railway Securities in Germany," and the criticisms by Dr. Van der Leyen, of the German department of public works, of methods of railway management in the United States, says:

It is, of course, a foolish error to suppose that all American railway finance is bad because some American railways have had dark and devious histories, but that the avenues of finance need cleansing there can be no doubt. And perhaps one of the most effectual means of bringing about wholesome reform would be for the English and Scotch markets to adopt the same attitude to American securities as has been taken in Germany. The hostile and suspicious feeling there toward American, especially railroad, securities is noteworthy, because it was in Frankfort that United States bonds found their first external market during the civil war, and in Frankfort American investments of all kinds have for a long term of years enjoyed a large popularity. The tide has turned so powerfully that Frankfort has been steadily "getting out" of American bonds and stocks of all kinds, and reinvesting in German and other European securities.

**American Kerosene in China.**—According to the London and China Telegraph of January 14, 1895, the Customs Gazette (No. 103), issued by the Chinese Statistical Department at Shanghai, shows that during the third quarter (July–September) of the year 1894, there was a largely increased importation into China of American kerosene, the figures for Russian oil showing a slight shrinkage. The total imports of American kerosene were 19,754,583 gallons against 14,763,220 gallons during the same period in 1893. The imports of Russian kerosene in 1894 were 3,712,180 gallons, against 3,988,194 gallons in 1893.

\*See CONSULAR REPORTS No. 165, p. 192, and No. 170, p. 383.

**Imports and Exports of Canada.**—From the report issued from the Department of Trade and Commerce (Ottawa), for the quarter ending September 30, 1894, the following statistics are extracted relative to the foreign commerce of the Dominion of Canada:

## IMPORTS.

Description.	Quarter ending September 30—			
	1893.		1894.	
	Value.	Duties.	Value.	Duties.
Dutiable.....	\$19,089,223	\$5,738,545	\$15,288,134	\$4,600,416
Free of duty.....	12,767,736		12,275,090	
Total.....	31,856,959	5,738,545	27,563,224	4,600,416
Imports of coin and bullion.....	\$2,404,766		\$3,376,274	

## EXPORTS.

Description.	Quarter ending September 30—			
	1893.		1894.	
	Home produce.	Foreign produce.	Home produce.	Foreign produce.
Produce of mines.....	\$1,427,997	\$108,042	\$1,515,092	\$84,857
Produce of fisheries.....	3,986,225	106,501	3,969,793	62,344
Produce of forests.....	10,588,133	45,252	9,529,695	116,330
Animals and their produce.....	11,088,259	485,778	11,646,782	639,860
Agricultural produce.....	3,717,090	4,565,274	2,588,665	1,468,600
Manufactures.....	1,940,936	166,437	1,925,497	447,471
All other exports.....	53,918	37,984	46,709	64,808
Total.....	32,802,558	5,515,268	31,222,163	2,884,270
Exports of bullion.....	\$94,181		\$95,561	
Exports of coin.....		\$623,544		\$353,477
Total.....	94,181	623,544	95,561	353,477

*Revenue and expenditures.*

Description.	1893.	1894.
Customs.....	\$5,457,859	\$4,385,314
Excise.....	2,014,021	1,796,846
Post-office.....	635,000	645,000
Public works and railway.....	1,066,315	1,045,730
Miscellaneous.....	180,688	151,055
Total revenue.....	9,353,883	8,023,945
Expenditure.....	5,640,947	5,765,536
Excess of revenue.....	3,712,936	2,258,409



**Treatment of Rhea Fiber.**—The Indian Engineer (of Calcutta) of December 22, 1894, says:

It will be interesting to our readers to know that the difficulty in treating this fiber (rhea) has been overcome, and that a company called the Midlands Spinning Co. (limited), of Long Eaton, Derbyshire, are now spinning and selling yarns especially adapted for the Nottingham lace trade. The yarns produced are rapidly taking the place of spun silk, the lace made from them being more brilliant when dyed than the former article. We have seen samples of these laces, and are compelled to say that for color and brilliancy they are far superior to anything we have hitherto seen in this line. We understand that the process is controlled by a powerful syndicate, and we hope shortly to record the steps they have taken in other branches of the textile industry. We also hope on the arrival of the next mail to be in a position to show samples of this fiber worked into fabrics of various kinds, which we make bold to assert will considerably open the eyes of textile manufacturers in this country and of cultivators of the raw material.

Rhea is also known as the ramie plant. It is native in the Malay Islands, China, and Japan, and has long been cultivated in parts of the East Indies. Textiles are made from it in China and Japan. It rivals flax in fineness, and has the luster of jute. It has been grown experimentally in the United States as far north as New Jersey.

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**Trade Revival in Brazil.**—A correspondent of the British Trade Journal (see page 15 of No. 385, January 1, 1895), furnishes that periodical with the following information as to the condition of business in Brazil: At Bahia, he says, he found "the tradespeople in the best of spirits," and at Rio de Janeiro the last traces of the insurrection were fast disappearing. He was informed that the coffee crops were very rich, "and the next crop from Rio de Janeiro, and São Paulo is expected to average 9,000,000 sacks." He adds that, owing to the check to imports during the revolt, the stores are badly stocked and the supplies insufficient to meet the demand. He thinks there are good opportunities, notwithstanding limited manufacture in Brazil, for coffee-cleaning machines, candles, shirts, and drugs, and that "any article manufactured in Europe can be sold here at a profit." The provision trade "is also a very important item for Brazil. Ironmongery, in all its branches, fencing wire, and Manchester goods are staple articles of importance." Immigrants, he states, are "flocking in in shoals like sardines." Of the foreign merchants in Brazil, "as usual, the Germans are the most painstaking and the most persevering."

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Full directions for binding the Consular Reports are given in No. 131, page 663.

## VALUES OF FOREIGN COINS.

The following statements show the valuation of foreign coins, as given by the Director of the United States Mint and published by the Secretary of the Treasury, in compliance with the first section of the act of March 3, 1873, viz: "That the value of foreign coins, as expressed in the money of account of the United States, shall be that of the pure metal of such coin of standard value," and that "the value of the standard coins in circulation of the various nations of the world shall be estimated annually by the Director of the Mint, and be proclaimed on the 1st day of January by the Secretary of the Treasury."

In compliance with the foregoing provisions of law, annual statements were issued by the Treasury Department, beginning with that issued on January 1, 1874, and ending with that issued on January 1, 1890. Since that date, in compliance with the act of October 1, 1890, these valuation statements have been issued quarterly, beginning with the statement issued on January 1, 1891.

These estimates "are to be taken (by customs officers) in computing the value of all foreign merchandise made out in any of said currencies, imported into the United States."

The following statements, running from January 1, 1874, to April 1, 1894, have been prepared to assist in computing the proper values in American money of the trade, prices, values, wages, etc., of and in foreign countries, as given in consular and other reports. The series of years are given so that computations may be made for each year in the proper money values of such year. In hurried computations, the reductions of foreign currencies into American currency, no matter for how many years, are too often made on the bases of latest valuations. When it is taken into account that the ruble of Russia, for instance, has fluctuated from 77.17 cents in 1874 to 37.2 cents in April, 1894, such computations are wholly misleading. All computations of values, trade, wages, prices, etc., of and in the "fluctuating-currency countries" should be made in the values of their currencies in each year up to and including 1890, and in the quarterly valuations thereafter.

To meet typographical requirements, the quotations for the years 1876, 1877, 1879, 1881, and 1882 are omitted, these years being selected as showing the least fluctuations when compared with years immediately preceding and following.

To save unnecessary repetition, the estimates of valuations are divided into three classes, viz: (A) countries with fixed currencies, (B) countries with fluctuating currencies, and (C) quarterly valuations of fluctuating currencies.

## A.—Countries with fixed currencies.

Countries.	Standard.	Monetary unit.	Value in terms of United States gold.	Coins.
Argentine Republic*....	Gold and silver...	Peso .....	\$0.96, 5	Gold—Argentine (\$4.82, 4) and $\frac{1}{2}$ Argentine; silver—peso and divisions.
Austria-Hungary†.....	Gold .....	Crown.....	.20, 3	Gold—20 crowns (\$4.05, 2) and 10 crowns.
Belgium.....	Gold and silver...	Franc.....	.19, 3	Gold—10 and 20 franc pieces; silver—5 francs.
Brazil.....	Gold .....	Milreis .....	.54, 6	Gold—5, 10, and 20 milreis; silver— $\frac{1}{2}$ , 1, and 2 milreis.
British North America (except Newfoundland)).	.... do.....	Dollar.....	1.00	
Chile‡.....	Gold and silver...	Peso .....	.91, 2	Gold—escudo (\$1.82, 4), doubloon (\$4.50, 1), and condor (\$9.12, 8); silver—peso and divisions.
Cuba.....	....do.....	....do.....	.92, 6	Gold—doubloon (\$5.01, 7); silver—peso.
Denmark.....	Gold .....	Crown.....	.26, 8	Gold—10 and 20 crowns.
Egypt.....	....do.....	Pound (100 piasters).	4.94, 3	Gold—10, 20, 50, and 100 piasters; silver—1, 2, 10, and 20 piasters.
Finland.....	....do.....	Mark.....	.19, 3	Gold—10 and 20 marks (\$1.93 and \$3.85, 9).
France.....	Gold and silver...	Franc.....	.19, 3	Gold—5, 10, 20, 50, and 100 francs; silver—5 francs.
Germany.....	Gold .....	Mark.....	.23, 8	Gold—5, 10, and 20 marks.
Great Britain.....	....do.....	Pound sterling....	4.86, 6 $\frac{1}{2}$	Gold—sovereign (pound sterling) and half sovereign.
Greece.....	Gold and silver...	Drachma.....	.19, 3	Gold—5, 10, 20, 50, and 100 drachmas; silver—5 drachmas.
Haiti.....	....do.....	Gourde.....	.96, 5	Silver—gourde.
Italy.....	....do.....	Lira.....	.19, 3	Gold—5, 10, 20, 50, and 100 lire; silver—5 lire.
Liberia.....	Gold .....	Dollar.....	1.00	
Netherlands§.....	Gold and silver...	Florin.....	.40, 2	Gold—10 florins; silver— $\frac{1}{2}$ , 1, and 2 $\frac{1}{2}$ florins.
Newfoundland.....	Gold .....	Dollar.....	1.01, 4	Gold—\$2 (\$2.02, 7).
Portugal.....	Gold .....	Milreis .....	1.08	Gold—1, 2, 5, and 10 milreis.
Spain.....	Gold and silver...	Peseta.....	.19, 3	Gold—25 pesetas; silver—5 pesetas.
Sweden and Norway...	Gold .....	Crown.....	.26, 8	Gold—10 and 20 crowns.
Switzerland.....	Gold and silver...	Franc.....	.19, 3	Gold—5, 10, 20, 50, and 100 francs; silver—5 francs.
Turkey.....	Gold .....	Piaster.....	.04, 4	Gold—25, 50, 100, 200, and 500 piasters.
Venezuela.....	Gold and silver...	Bolivar.....	.19, 3	Gold—5, 10, 20, 50, and 100 bolivars; silver—5 bolivars.

\* In 1874 and 1875 the gold standard prevailed in the Argentine Republic. Its currency does not appear in the statements again until 1883, when the double standard prevailed, and the peso attained a fixed value of 96.5 cents.

† On reference to the table of "fluctuating currencies," it will be seen that Austria had the silver standard up to and including the quarter ending July 1, 1892. The next quarter (October 1) inaugurated the gold standard (see note under table of "fluctuating currencies").

‡ The gold standard prevailed in Chile until January 1, 1890. The value of the peso has been the same under both standards.

§ The Netherlands florin, as will be seen in the "fluctuating" table, became fixed in value (40.2 cents) in 1880.



## B.—Countries with fluctuating currencies, 1874-'90.

Countries.	Standard.	Monetary unit.	Value in terms of the United States gold dollar on January 1—					
			1874.	1875.	1878.	1880.	1883.	1884.
Austria-Hungary*	Silver.....	Florin.....	\$0.47,6	\$0.45,3	\$0.45,3	\$0.41,3	\$0.40,1	\$0.39,8
Bolivia.....	do.....	Dollar until 1880; bolivi- ano there- after.	.96,5	.96,5	.96,5	.83,6	.81,2	.80,6
Central America.....	do.....	Peso.....	.96,5	.91,8	.91,8	.83,6	.....	.....
China.....	Silver.....	Haikwan tael....	1.61	1.61	.....	.....	.....	.....
Colombia.....	do.....	Peso.....	.96,5	.96,5	.96,5	.83,6	.81,2	.80,6
Ecuador.....	do.....	do.....	.96,5	.91,8	.91,8	.83,6	.81,2	.80,6
Egypt†.....	Gold.....	Pound (100 piasters).	.....	.....	4.97,4	4.97,4	4.90	4.90
India.....	Silver.....	Rupee.....	.45,8	.43,6	.43,6	.39,7	.38,6	.38,3
Japan.....	{ Gold..... Silver..... }	{ Yen..... Yen..... }	{ .99,7 .99,7 }	{ .99,7 .99,7 }	{ .99,7 .99,7 }	{ .99,7 .99,7 }	.87,6	.86,9
Mexico.....	do.....	Dollar.....	1.04,7½	.99,8	.99,8	.90,9	.88,2	.87,5
Netherlands ‡.....	Gold and silver..	Florin.....	.40,5	.38,5	.38,5	.40,2	.....	.....
Peru.....	Silver.....	Sol.....	.92,5	.91,8	.91,8	.83,6	.81,2	.80,6
Russia.....	do.....	Ruble.....	.77,17	.73,4	.73,4	.66,9	.65	.64,5
Tripoli.....	do.....	Mahbub of 20 piasters.	.87,09	.82,9	.82,9	.74,8	.73,3	.72,7

Countries.	Standard.	Monetary unit.	Value in terms of the United States gold dollar on January 1—					
			1885.	1886.	1887.	1888.	1889.	1890.
Austria-Hungary*	Silver.....	Florin.....	\$0.39,3	\$0.37,1	\$0.35,9	\$0.34,5	\$0.33,6	\$0.42
Bolivia.....	do.....	Dollar until 1880; bolivi- ano there- after.	.79,5	.75,1	.72,7	.69,9	.68	.85
Central America.....	do.....	Peso.....	.....	.....	.....	.69,9	.68	.85
Colombia.....	do.....	do.....	.79,5	.75,1	.72,7	.69,9	.68	.85
Ecuador.....	do.....	do.....	.79,5	.75,1	.72,7	.69,9	.68	.85
Egypt†.....	Gold.....	Pound (100 piasters).	4.90	4.90	4.94,3	4.94,3	4.94,3	4.93,3
India.....	Silver.....	Rupee.....	.37,3	.35,7	.34,6	.33,2	.32,3	.40,4
Japan.....	{ Gold..... Silver..... }	{ Yen..... Yen..... }	{ .85,8 .85,8 }	{ .81 .81 }	{ .99,7 .78,4 }	{ .99,7 .75,3 }	{ .99,7 .73,4 }	{ .99,7 .91,7 }
Mexico.....	do.....	Dollar.....	.86,4	.81,6	.79	.75,9	.73,9	.92,3
Peru.....	Silver.....	Sol.....	.79,5	.75,1	.72,7	.69,9	.68	.85
Russia.....	do.....	Ruble.....	.63,6	.60,1	.58,2	.55,9	.54,4	.68
Tripoli.....	do.....	Mahbub of 20 piasters.	.71,7	.67,7	.65,6	.63	.61,4	.76,7

\* The silver standard prevailed in Austria-Hungary up to 1892. The law of August 2 of that year (see CONSULAR REPORTS, No. 147, p. 623) established the gold standard.

† The Egyptian pound became fixed in value at \$4.94,3 in 1887.

‡ The Netherlands florin fluctuated up to the year 1880, when it became fixed at 40.2 cents.

## C.—Quarterly valuations of fluctuating currencies, 1891-'94.

Countries.	Monetary unit.	1891.				1892.			
		Jan. 1.	April 1.	July 1.	Oct. 1.	Jan. 1.	April 1.	July 1.	Oct. 1.
Austria-Hungary *	{ Gold crown.....								\$0.20,3
	{ Silver florin.....	\$0.38,1	\$0.36,3	\$0.36,3	\$0.35,7	\$0.34,1	\$0.32,8	\$0.32	
Bolivia.....	Silver boliviano.....	.77,1	.73,5	.73,6	.72,3	.69,1	.66,5	.64,9	.61,6
Central America.....	Silver peso.....	.77,1	.73,5	.73,6	.72,3	.69,1	.66,5	.64,9	.61,6
China†.....	{ Shanghai tael.....	1.13,9	1.08,5	1.06,7	1.06,8	1.02,1	.98,2	.95,8	.91
	{ Haikwan tael.....	1.27	1.20,9	1.21	1.18,9	1.13,7	1.09,3	1.06,7	1.01,3
Colombia.....	Silver peso.....	.77,1	.73,5	.73,6	.72,3	.69,1	.66,5	.64,9	.61,6
Ecuador.....	do.....	.77,1	.73,5	.73,6	.72,3	.69,1	.66,5	.64,9	.61,6
India.....	Silver rupee.....	.36,6	.34,9	.35	.34,3	.32,8	.31,6	.30,8	.29,3
Japan‡.....	Silver yen.....	.83,1	.79,2	.79,3	.77,9	.74,5	.71,6	.69,9	.66,4
Mexico.....	Silver dollar.....	.83,7	.80	.80	.78,5	.75	.72,2	.70,4	.66,9
Peru.....	Silver sol.....	.77,1	.73,5	.73,6	.72,3	.69,1	.66,5	.64,9	.61,6
Russia§.....	Silver ruble.....	.61,7	.58,8	.58,8	.57,8	.55,3	.53,1	.51,9	.49,2
Tripoli.....	Silver mahbub.....	.69,5	.66,3	.66,4	.65,2	.62,3	.60	.58,5	.55,5
Venezuela ¶.....	Silver bolivar.....	.15,4	.14,7	.14,7	.14,5	.13,8	.13,3	.13	.12,3

Countries.	Monetary unit.	1893.				1894.			Jan. 1, 1895.
		Jan. 1.	April 1.	July 1.	Oct. 1.	Jan. 1.	April 1.	Oct. 1.	
Bolivia.....	Silver boliviano.....	\$0.61,3	\$0.61	\$0.60,4	\$0.53,1	\$0.51,6	\$0.46,5	\$0.46,4	\$0.45,5
Central America.....	Silver peso.....	.61,3	.61	.60,4	.53,1	.51,6	.46,5	.46,4	.45,5
	{ Shanghai tael.....	.90,6	.90,1	.89,2	.78,4	.76,2	.68,6	.68,5	.67,3
China†.....	{ Haikwan tael.....	1.01	1.00,4	.99,4	.87,4	.84,9	.76,5	.76,3	.74,9
	{ Tien-Tsin tael.....							.72,7	.71,4
	{ Chefoo tael.....							.71,7	.70,4
Colombia.....	Silver peso.....	.61,3	.61	.60,4	.53,1	.51,6	.46,5	.46,4	.45,5
Ecuador.....	do.....	.61,3	.61	.60,4	.53,1	.51,6	.46,5	.46,4	.45,5
India.....	Silver rupee.....	.29,2	.29	.28,7	.25,2	.24,5	.22,1	.22	.21,6
Japan‡.....	Silver yen.....	.66,1	.65,8	.65,1	.57,3	.55,6	.50,1	.50	.49,1
Mexico.....	Silver dollar.....	.66,6	.66,2	.65,6	.57,7	.56	.50,5	.50,4	.49,5
Peru.....	Silver sol.....	.61,3	.61	.60,4	.53,1	.51,6	.46,5	.46,4	.45,5
Russia§.....	Silver ruble.....	.49,1	.48,8	.48,3	.42,5	.41,3	.37,2	.37,1	.36,4
Tripoli.....	Silver mahbub.....	.55,3	.55	.54,5	.47,9	.46,5	.41,9	.41,8	.41,1

\* Austria-Hungary had the silver standard up to August, 1892 (see note to "fluctuating" table B).

† China (silver). The Haikwan tael is the customs tael, and the Shanghai tael that used in trade. Consul-General Denny (CONSULAR REPORTS No. 43, p. 516) says: "The value of the tael varies in the different ports of China, and every port has two taels, one being the Government, or Haikwan, tael, in which all duties have to be paid, and the other the market tael, the former exceeding the latter by some 11 per cent."

‡ Gold is the nominal standard in Japan, but silver is practically the standard. The fixed value of the gold yen is 99.7 cents.

§ The gold ruble is valued at 77.2 cents. Silver is the nominal standard, but paper is the actual currency, and its depreciation is measured by the gold standard.

¶ The Venezuelan bolivar became fixed in value (19.3 cents) on January 1, 1892.

## FOREIGN WEIGHTS AND MEASURES.

The following table embraces only such weights and measures as are given from time to time in CONSULAR REPORTS and in Commercial Relations:

### *Foreign weights and measures, with American equivalents*

Denominations.	Where used.	American equivalent.
Almude.....	Portugal.....	4.422 gallons.
Ardeb.....	Egypt.....	7.6907 bushels.
Are.....	Metric.....	0.02471 acre.
Arobe.....	Paraguay.....	25 pounds.
Arratel or libra.....	Portugal.....	1.011 pounds.
Arroba (dry).....	Argentine Republic.....	25.3175 pounds.
Do.....	Brazil.....	32.38 pounds.
Do.....	Cuba.....	25.3664 pounds.
Do.....	Portugal.....	32.38 pounds.
Do.....	Spain.....	25.36 pounds.
Do.....	Venezuela.....	25.4024 pounds.
Arroba (liquid).....	Cuba, Spain, and Venezuela.....	4.263 gallons.
Arshine.....	Russia.....	28 inches.
Arshine (square).....	do.....	5.44 square feet.
Artel.....	Morocco.....	1.12 pounds.
Baril.....	Argentine Republic and Mexico.....	20.0787 gallons.
Barrel.....	Malta (customs).....	11.4 gallons.
Do.....	Spain (raisins).....	100 pounds.
Berkovet.....	Russia.....	361.12 pounds.
Bongkal.....	India.....	822 grains.
Bonw.....	Sumatra.....	7,096.5 square meters.
Bu.....	Japan.....	0.1 inch.
Butt (wine).....	Spain.....	140 gallons.
Caffiso.....	Malta.....	5.4 gallons.
Candy.....	India (Bombay).....	529 pounds.
Do.....	India (Madras).....	500 pounds.
Cantar.....	Morocco.....	113 pounds.
Do.....	Syria (Damascus).....	575 pounds.
Do.....	Turkey.....	124.7036 pounds.
Cantaro (Cantar).....	Malta.....	175 pounds.
Carga.....	Mexico and Salvador.....	300 pounds.
Catty.....	China.....	1.333½ (1½) pounds.
Do.....	Japan.....	1.31 pounds.
Do.....	Java, Siam, Malacca.....	1.35 pounds.
Do.....	Sumatra.....	2.12 pounds.
Centaro.....	Central America.....	4.2631 gallons.
Centner.....	Bremen and Brunswick.....	117.5 pounds.
Do.....	Darmstadt.....	110.24 pounds.
Do.....	Denmark and Norway.....	110.11 pounds.
Do.....	Nuremberg.....	112.43 pounds.
Do.....	Prussia.....	113.44 pounds.
Do.....	Sweden.....	93.7 pounds.
Do.....	Vienna.....	123.5 pounds.
Do.....	Zollverein.....	110.24 pounds.
Do.....	Double or metric.....	220.46 pounds.
Chih.....	China.....	14 inches.
Coyan.....	Sarawak.....	3,098 pounds.
Do.....	Siam (Koyan).....	2,667 pounds.

*Foreign weights and measures, with American equivalents—Continued.*

Denominations.	Where used.	American equivalent.
Cuadra.....	Argentine Republic.....	4 2 acres.
Do.....	Paraguay.....	78.9 yards.
Do.....	Paraguay (square).....	8.077 square feet.
Do.....	Uruguay.....	Nearly 2 acres.
Cubic meter.....	Metric.....	35.3 cubic feet.
Cwt. (hundredweight).....	British.....	112 pounds.
Dessiatine.....	Russia.....	2.6997 acres.
Do.....	Spain.....	1.599 bushels.
Drachme.....	Greece.....	Half ounce.
Dun.....	Japan.....	1 inch.
Egyptian weights and measures.....	(See CONSULAR REPORTS No. 144.)	
Fanega (dry).....	Central America.....	1.5745 bushels.
Do.....	Chile.....	2.575 bushels.
Do.....	Cuba.....	1.599 bushels.
Do.....	Mexico.....	1.54728 bushels.
Do.....	Morocco.....	Strike fanega, 70 lbs. full fanega, 118 lbs.
Do.....	Uruguay (double).....	7.776 bushels.
Do.....	Uruguay (single).....	3.888 bushels.
Do.....	Venezuela.....	1.599 bushels.
Fanega (liquid).....	Spain.....	16 gallons.
Feddán.....	Egypt.....	1.03 acres.
Frail (raisins).....	Spain.....	50 pounds.
Frasco.....	Argentine Republic.....	2.5096 quarts.
Do.....	Mexico.....	2.5 quarts.
Fuder.....	Luxemburg.....	264 17 gallons.
Garnice.....	Russian Poland.....	0.88 gallon.
Gram.....	Metric.....	15.432 grains.
Hectare.....	do.....	2.471 acres.
Hectoliter:		
Dry.....	do.....	2.838 bushels.
Liquid.....	do.....	26.417 gallons.
Joch.....	Austria-Hungary.....	1.422 acres.
Ken.....	Japan.....	4 yards.
Kilogram (kilo).....	Metric.....	2.2046 pounds.
Kilometer.....	do.....	0.621376 mile.
Klafter.....	Russia.....	216 cubic feet.
Kota.....	Japan.....	5.13 bushels.
Korrec.....	Russia.....	3 5 bushels.
Last.....	Belgium and Holland.....	85.134 bushels.
Do.....	England (dry malt).....	82.52 bushels.
Do.....	Germany.....	2 metric tons (4,480 pounds).
Do.....	Prussia.....	112.29 bushels.
Do.....	Russian Poland.....	11 3/8 bushels.
Do.....	Spain (salt).....	4.760 pounds.
League (land).....	Paraguay.....	4.633 acres.
Li.....	China.....	2,115 feet.
Libra (pound).....	Castilian.....	7,100 grains (troy)
Do.....	Argentine Republic.....	1.0127 pounds.
Do.....	Central America.....	1.043 pounds.
Do.....	Chile.....	1.014 pounds.
Do.....	Cuba.....	1.0161 pounds.
Do.....	Mexico.....	1.01465 pounds.
Do.....	Peru.....	1.0143 pounds.
Do.....	Portugal.....	1.011 pounds.
Do.....	Uruguay.....	1.0143 pounds.
Do.....	Venezuela.....	1.0161 pounds.
Liter.....	Metric.....	1.0567 quarts.
Livre (pound).....	Greece.....	1.1 pounds.
Do.....	Guiana.....	1.0791 pounds.

*Foreign weights and measures, with American equivalents—Continued.*

Denominations.	Where used.	American equivalent.
Load.....	England (timber).....	Square, 50 cubic feet; unhewn, 40 cubic feet; inch planks, 600 super- ficial feet.
Manzana.....	Costa Rica.....	1½ acres.
Marc.....	Bolivia.....	0.507 pound.
Maund.....	India.....	82½ pounds.
Meter.....	Metric.....	39.37 inches.
Mil.....	Denmark.....	4.68 miles.
Do.....	Denmark (geographical).....	4.61 miles.
Morgen.....	Prussia.....	0.63 acre.
Oke.....	Egypt.....	2.7225 pounds.
Do.....	Greece.....	2.84 pounds.
Do.....	Hungary.....	3.0817 pounds.
Do.....	Turkey.....	2.85418 pounds.
Do.....	Hungary and Wallachia.....	2.5 pints.
Pic.....	Egypt.....	21¾ inches.
Picul.....	Borneo and Celebes.....	135.64 pounds.
Do.....	China, Japan, and Sumatra.....	133½ pounds.
Do.....	Java.....	135.1 pounds.
Do.....	Philippine Islands (hemp).....	139.45 pounds.
Do.....	Philippine Islands (sugar).....	140 pounds.
Pie.....	Argentine Republic.....	0.9478 foot.
Do.....	Castilian.....	0.91407 foot.
Pik.....	Turkey.....	27.9 inches.
Pood.....	Russia.....	36.112 pounds.
Pund (pound).....	Denmark and Sweden.....	1.102 pounds.
Quarter.....	Great Britain.....	8.252 bushels.
Do.....	London (coal).....	36 bushels.
Quintal.....	Argentine Republic.....	101.42 pounds.
Do.....	Brazil.....	130.06 pounds.
Do.....	Castile, Chile, Mexico, and Peru.....	101.61 pounds.
Do.....	Greece.....	123.2 pounds.
Do.....	Newfoundland (fish).....	112 pounds.
Do.....	Paraguay.....	100 pounds.
Do.....	Syria.....	125 pounds.
Do.....	Metric.....	220.46 pounds.
Rottle.....	Palestine.....	6 pounds.
Do.....	Syria.....	5¾ pounds.
Sagen.....	Russia.....	7 feet.
Salm.....	Malta.....	490 pounds.
Se.....	Japan.....	3.6 feet.
Seer.....	India.....	1 pound 13 ounces.
Shaku.....	Japan.....	10 inches.
Sho.....	do.....	1.6 quarts.
Standard (St. Petersburg).....	Lumber measure.....	165 cubic feet.
Stone.....	British.....	14 pounds.
Suerte.....	Uruguay.....	2,700 cuadras ( <i>see</i> cua- dra).
Tael.....	Cochin China.....	590.75 grains (troy).
Tan.....	Japan.....	0.25 acre.
To.....	do.....	2 pecks.
Ton.....	Space measure.....	40 cubic feet.
Tonde (cereals).....	Denmark.....	3.94783 bushels.
Tondeland.....	do.....	1.36 acres.
Tsubo.....	Japan.....	6 feet square.
Tsun.....	China.....	1.41 inches.
Tunna.....	Sweden.....	4.5 bushels.
Tunnland.....	do.....	1.22 acres.
Vara.....	Argentine Republic.....	34.1208 inches.
Do.....	Castile.....	0.914117 yard.
Do.....	Central America.....	38.874 inches.

*Foreign weights and measures, with American equivalents—Continued.*

Denominations.	Where used.	American equivalent.
Vara.....	Chile and Peru .....	33.367 inches.
Do.....	Cuba.....	33.384 inches.
Do.....	Curaçao.....	33.375 inches.
Do.....	Mexico.....	33 inches.
Do.....	Paraguay.....	34 inches.
Do.....	Venezuela.....	33.384 inches.
Vedro.....	Russia.....	2.707 gallons.
Vergees.....	Isle of Jersey.....	71.1 square rods.
Verst.....	Russia.....	0.663 mile.
Vlocka.....	Russian Poland.....	41.98 acres.

## METRIC WEIGHTS AND MEASURES.

*Metric weights.*

Milligram ( $\frac{1}{1000}$  gram) equals 0.0154 grain.  
 Centigram ( $\frac{1}{100}$  gram) equals 0.1543 grain.  
 Decigram ( $\frac{1}{10}$  gram) equals 1.5432 grains.  
 Gram equals 15.432 grains.  
 Decagram (10 grams) equals 0.3527 ounce.  
 Hectogram (100 grams) equals 3.5274 ounces.  
 Kilogram (1,000 grams) equals 2.2046 pounds.  
 Myriagram (10,000 grams) equals 22.046 pounds.  
 Quintal (100,000 grams) equals 220.46 pounds.  
 Millier or tonnea—ton (1,000,000 grams) equals 2,204.6 pounds.

*Metric dry measure.*

Millimeter ( $\frac{1}{1000}$  liter) equals 0.061 cubic inch.  
 Centiliter ( $\frac{1}{100}$  liter) equals 0.6102 cubic inch.  
 Deciliter ( $\frac{1}{10}$  liter) equals 6.1022 cubic inches.  
 Liter equals 0.908 quart.  
 Decaliter (10 liters) equals 9.08 quarts.  
 Hectoliter (100 liters) equals 2.838 bushels.  
 Kiloliter (1,000 liters) equals 1.308 cubic yard

*Metric liquid measure.*

Millimeter ( $\frac{1}{1000}$  liter) equals 0.27 fluid ounce.  
 Centiliter ( $\frac{1}{100}$  liter) equals 0.338 fluid ounce.  
 Deciliter ( $\frac{1}{10}$  liter) equals 0.845 gill.  
 Liter equals 1.0567 quarts.  
 Decaliter (10 liters) equals 2.6417 gallons.  
 Hectoliter (100 liters) equals 26.417 gallons.  
 Kiloliter (100 liters) equals 264.17 gallons.

*Metric measures of length.*

Millimeter ( $\frac{1}{1000}$  meter) equals 0.0394 inch.  
 Centimeter ( $\frac{1}{100}$  meter) equals 0.3937 inch.  
 Decimeter ( $\frac{1}{10}$  meter) equals 3.937 inches.  
 Meter equals 39.37 inches.

Decameter (10 meters) equals 393.7 inches.

Hectometer (100 meters) equals 328 feet 1 inch.

Kilometer (1,000 meters) equals 0.62137 mile (3,280 feet 10 inches).

Myriameter (10,000 meters) equals 6.2137 miles.

*Metric surface measures.*

Centare (1 square meter) equals 1,550 square inches.

Are (100 square meters) equals 119.6 square yards.

Hectare (10,000 square meters) equals 2.471 acres.

# CONSULAR REPORTS.

## COMMERCE, MANUFACTURES, ETC.

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### LABOR IN FRANCE.

Under this title, it is proposed to treat of the hours of labor, wages, working days per year, classification of workers, and other questions immediately relating thereto as they exist to-day in Paris and the department of the Seine. The material for the larger part of this report is taken from the "Reports of the French Labor Bureau," the scope and method of treatment following those of that bureau.

The subject is divided into two parts by Mr. Jules Lax. In his letter of transmittal to the Minister of Commerce, Industry, and Colonies of the French Republic, he says:

I have been led to divide our inquiry into two distinct parts, which were not susceptible, respectively, to the same method of treatment. One of these parts embraces those industries which are generally conducted on a more or less important scale in large or medium factories or establishments; the other embraces the small industries, *i. e.*, those carried on by small merchant manufacturers, or in the homes of families.

Speaking generally, the division of industries here indicated is characterized, in the first instance, by the use of steam or other mechanical power, generated on the premises, and, in the second case, by manual labor, or power borrowed from other sources. This distinction, however, is not inherent throughout, public works and house building, which are included in the first division, not employing steam power in the form here indicated.

The first of these divisions will be subdivided into the following groups: (1) alimentary products, (2) chemical products, (3) paper, rubber, and other like products, (4) leather, (5) textile industries, (6) products of wood, (7) metals, (8) stone, and (9) transportation and Government industries.



## I.—ALIMENTARY PRODUCTS.

The first of these groups—that of alimentary products—embraces those industries which treat by mechanical means the raw materials of alimentation, such as cereals, fruits, and meats; those which subject these raw materials or their products to the action of heat either to preserve or to change them—in a word, those industries which treat these materials by any process for the purpose of preparing them for consumption.

*Employees.*—In the more important establishments, such as flour mills, refineries, distilleries, breweries, etc., the operations of grinding, mixing, cooking, distillation, etc., are often accomplished by the aid of machinery and engines of great power, where the motor power to each 100 workers averages more than 100 horsepower. In the past, these operations were carried on by means of hand power or very small motors, the industries being conducted on an unimportant scale, such as in bakeries, confectioneries, etc. These industries require very little skilled labor, a certain number of overseers and specialists being the limit. The greater part of the operations, which vary but little, are, for the most part, carried on automatically, and the worker's only rôle is to feed the machines and carry away the finished product. In the case of the little industries of this group, the labor being performed by hand also varies very little, and, hence, there is no latitude for the worker to either exercise or attain any great degree of intellectual development. The result is that the employees of this group are, for the most part, unskilled laborers, who, after an apprenticeship of a few months, or even weeks, acquire all of the skill necessary.

The operations requiring the least physical force are performed by women and children, and, in certain establishments these constitute, sometimes, as much as 70 per cent of the working force. The flour mills, distilleries, breweries, manufactories of liquors, salted provisions, etc., employ neither women nor children, while, on the other hand, in sugar-cutting establishments, manufactories of preserves, chocolate, etc., women and children are largely employed.

*Working time.*—Production continues throughout the year in the milling establishments and certain refineries; a part of the year only in the starch works and certain distilleries. Production on Sunday is general in the case of manufactories of liquors and mineral waters, bakeries, and salted provisions. In the other industries there are nearly always three hundred days of production per year, and, sometimes, more. The actual number of working days per employee will vary from 8 per cent less than this, on account of sickness and other causes.

The average duration of a day's work is from ten to eleven hours in the majority of cases. It exceeds eleven hours in the distilleries and manufactories of liquors, and it is less than ten and one-half hours in the starch works, bakeries, pastry, and confectionery establishments when these are conducted on a large scale. With regard to the regularity throughout the year of these averages, it may be added that the milling establishments have but one rule

for the entire year, *i. e.*, eleven hours; the breweries and the manufactories of liquors and chocolate have two periods, during one of which the duration is from ten to eleven hours, and during the other period from eleven to twelve hours. It should be understood that these figures pertain to whole establishments, and constitute the general rule, and do not relate to particular instances, where a greater or lesser number of employees work longer hours. In the other industries of this group, there are some where there is great regularity in the length of a working day, and others where it changes frequently between the limits of eight and thirteen hours.

It is naturally in the industries where production is variable that there is the greatest loss of time for employees, and the greatest variation in the working force. Those in which production is carried on during certain periods of the year only, such as canning factories, distilleries, etc., give occupation to their force only during such periods, and the workers, for the rest of the year, seek other occupations. The products of some industries are in much more active demand at fixed periods of the year, and, thus, these industries, though running all the year, have periods of greater or less activity, when the working force varies accordingly. Such are the manufactories of liquors, pastry, and confectionery. In flour mills, production is constant, and the working force, accordingly, varies but little.

*Wages by industries.*—Notwithstanding the fact that the large majority of employees of this group of industries are unskilled workmen or workwomen, important differences will be observed in the case of individual wages, these variations being due to particular qualities possessed by the worker, such as strength, regularity, activity, etc. The average wages of any particular establishment depend largely upon the proportion of women and children employed. Yet, notwithstanding this element, it will be noted in Table V, at the end of this report, in comparing columns 14 and 16, that in given cases where the number of employed women and children are equal, there still remain important differences in the average wages. Columns 12 and 13 of table V are interesting in this connection.

In order to compare the average wages in the different alimentary industries, attention is invited to the two series here presented wherein are shown in a descending scale for male and female employees the industries ranged according to the wages paid:

Male employees—(1) Preserved vegetables and fruits, (2) bakeries, (3) salted provisions, (4) miscellaneous products, (5) flour mills, (6) distilleries of alcohol, (7) manufacture of various liquors, (8) sugar refineries, (9) preparation of cereals, (10) manufacture of chocolate, (11) manufacture of pastry and confectionery, (12) breweries, (13) starch, (14) farinaceous products, (15) sugar cutting.

Female employees—(1) Bakeries, (2) miscellaneous products, (3) refineries, (4) manufacture of pastry and confectionery, (5) manufacture of chocolate, (6) manufacture of starch, (7) sugar cutting, (8) preserved vegetables and fruits.

At the head of the list for male employees, with an average wage in excess of 6 francs (\$1.16) per day of ten hours, are to be found the establishments for the production of preserved fruits and vegetables, bakeries, and salted provisions. The male employees of these industries are not numerous, and those employed are generally highly skilled and inured to great fatigue. At the foot of this list, with an average wage of less than 5 francs (96.5 cents) for a day of ten hours, are to be found the breweries, sugar-cutting establishments, starch works, etc.

The highest paid female employees—3.50 francs (67.6 cents) per day of ten hours—are found in the bakery establishments. The least paid—2.50 francs (48 cents) for ten hours—are employed in the sugar-cutting establishments, the fruit and vegetable factories, and the starch works.

Among those industries where wages are the lowest, are to be found those which are the most unhealthful, and where loss of time for the employees is the greatest, such as in the canning factories and in the manufactories of farinaceous products.

*Wages by occupations in the alimentary industries.*

Occupations.	Time or piecework.	Average wages per working day.		
<i>Males.</i>				
Flour mills, etc.:		<i>Francs.</i>		
Foremen.....	Time.....	8.00 to 12.00	\$1.54 to \$2.32	
Millers.....	do.....	5.00 to 8.00	.96½ to 1.54	
Millers' helpers.....	do.....	5.00	.96½	
Coopers.....	do.....	4.30	.87	
Sugar refineries:				
Cleaner of sugar loaves.....	do.....	6.65		1.28
Clarifiers.....	Time and piece...	5.15		.99½
Turbine men.....	Piece.....	5.60		1.09
Mold fillers.....	Time and piece...	5.45		1.05
Truckers.....	Piece.....	8.50		1.64
Sugar cutters.....	do.....	5.85		1.14
Foremen and cooks.....	Time.....	9.00		1.74
Coppersmiths.....	do.....	7.70		1.49
Tinsmiths.....	do.....	6.05		1.17
Turners.....	do.....	7.05		1.36
Fillers.....	Time and piece...	5.45 to 6.00	1.00 to 1.06	
Emptiers.....	Piece.....	7.00		1.35
Sack washers.....	do.....	5.25		1.01
Form washers.....	do.....	5.70		1.10
Distilleries, manufactories of liquors, and breweries:				
Distillers.....	Time.....	6.00		1.16
Distillers of liquors.....	do.....	6.00		1.16
Filterers.....	do.....	6.25 to 6.50	1.20 to 1.25	
Furnace men.....	do.....	5.00		.96½
Coopers.....	do.....	6.00 to 8.00	1.16 to 1.54	
Brewers.....	do.....	5.00		.96½
Laborers.....	do.....	4.25 to 4.75	.82 to .91	
Foremen.....	do.....	8.50 to 14.00	1.54 to 2.70	
Manufacture of seltzer water, etc.:				
Fitters.....	do.....	5.70		1.10
Repairers of siphons.....	Piece.....	6.00 to 7.25	1.16 to 1.40	
Do.....	Time.....	3.25 to 5.50	.63 to 1.06	
Siphon cleaners.....	do.....	4.60		.88
Siphon fillers.....	Time and piece...	4.00		.77

*Wages by occupations in the alimentary industries—Continued.*

Occupations.	Time or piecework.	Average wages per working day.			
<i>Males—Continued.</i>					
Manufacture of seltzer water, etc.—Continued.		<i>Francs.</i>			
Laborers .....	Time.....	4.00 to 5.70	\$0.77	to	\$1.10
Foremen.....	.....do.....	6.50 to 8.75	1.25	to	1.60
Bakeries and pastry and confectionery making:					
Chief bakers.....	.....do.....	7.00			1.35
French bakers.....	.....do.....	6.50			1.25
Viennese bakers.....	.....do.....	6.90			1.33
Pastry bakers.....	.....do.....	5.00 to 12.00	.96½	to	2.32
Deliverers .....	.....do.....	4.70			.91
Workers.....	Time and piece...	5.00 to 10.80	.96½	to	2.09
Furnace men.....	Time.....	6.50 to 7.50	1.25	to	1.45
Cook.....	.....do.....	7.50			1.45
Overseers.....	.....do.....	4.00 to 10.60	.77	to	2.05
Confectioners .....	.....do.....	6.00 to 17.00	1.16	to	3.28
<i>Females.</i>					
Sugar cutters.....	Time.....	2.75 to 3.55	.53	to	.69
Do.....	Piece.....	4.15			.80
Sugar packers.....	Time.....	2.00			.39
Bread carriers.....	.....do.....	2.50			.48
Fruit peelers.....	Time and piece...	1.00 to 3.50	.19½	to	.68
Chocolate hands.....	Time.....	2.75 to 3.30	.53	to	.68
Do.....	Piece.....	3.75 to 5.00	.72	to	1.16
Pastry hands.....	Time and piece...	3.00 to 4.50	.58	to	.87
Candy and other packers.....	Time.....	3.50			.74
Forewomen.....	.....do.....	3.90 to 6.00	.58	to	1.16
Workwomen.....	.....do.....	1.50 to 4.00	.29	to	.77

Among the occupations enumerated in this table, there are some (such as the truckers) which require more than ordinary strength; others (such as chief bakers, confectioners, pastry makers, etc.,) which require a previous apprenticeship of considerable duration. But, as already stated, artisans possessing a trade are not numerous in these industries, the majority being mere laborers. The average wages per working day of these laborers is 5.35 francs (\$1.01) or 5 francs (96½ cents) per day of ten hours.

*Time and piecework.*—Employees are generally paid by the hour or day in the cereal industries, the distilleries, and the manufactories of chocolate. They are paid generally by the piece in the sugar refineries and cutting establishments. Work by gangs of workers is more or less frequent, and the bosses of these gangs are really subcontractors, who hire hands and regulate wages without interference from the proprietor of the establishment. In this group of industries, the details of production are always the same, and the rates of pay by the piece and the productiveness of labor have remained stationary for a long time. It results that for the same kind and amount of work, the same worker will gain as much in working by time as by piece. Piecework has the advantage, however, of assuring the maximum production with the minimum superintendence. It is observed, sometimes, in the same establishment that employees working by time are paid less than others working by the piece, the character of the work in each case being the same, but

this is explained by the fact that they are less skilled than the others, and are new hands. On the other hand, in certain cases, like those of fruit and vegetable canning establishments, the workers paid by the time are best paid, because, in these cases, they are the most reliable, as well as skilled, of the working force. On the whole, a comparison of these two modes of payment in this group does not possess much value.

## II.—CHEMICAL PRODUCTS.

The industries embraced under this head employ machinery only to a limited extent, though certain mechanical operations, such as crushing, mixing, pressing, etc., require more or less steam power. The greater part of the operations, however, require heat as the principal agent. The horsepower employed per one hundred hands varies from 80 to none at all. In the gas works and in the manufacture of fireworks, it is less than 10, while in the large chemical works, it is greater than 50.

*Employees.*—The greater part of the employees, as in the preceding group, are laborers, the explanation of this fact being the same for both groups. Few women and children are employed in the large chemical works, but in the soap factories, manufactories of perfumery, candles, ink, etc., as large a proportion as 50 per cent is found.

*Working time.*—The large chemical works run the year round, as a rule, and night work is frequent. In the other industries, production, if not continuous, is regular. In a large number of factories, Sunday morning work is quite customary. The number of days of production in the year generally exceeds three hundred, the number of working days per employee averaging a little less—3 or 4 per cent, at the most. In certain cases, it will be noted that the number of working days per employee in the year exceeds the number of days the establishment runs. This is explained by the fact that a portion of the working force is sometimes employed in accessory work, which can not be designated as production, such as cleaning, etc., which, therefore, increases the average number of working days per employee. In the chemical works, the average working day is a little more than eleven hours. It varies throughout the year from eleven to twelve hours, and, in rare cases, from nine to thirteen hours. Certain employees—firemen, workers in the acid rooms, etc.—work regularly twelve hours per day. In the other industries of this group, the average duration of the working day is from ten to eleven hours. In firework establishments, it varies from eight to twelve hours, depending upon daylight, as artificial illumination is not used.

*Wages by industries.*—There is not a wide difference in the wages of male employees in these industries. With few exceptions they are always between 4.50 and 5.50 francs (86.8 cents to \$1.06) per day. For a very few boys or old men, they are as low as 2.55 francs (49 cents), and in some special cases, they amount to 8 francs (\$1.34). The general average is about 5 francs (96.5 cents).

In the descending scale of industries, ranged according to the average wages paid for ten hours' work, it is seen that the highest average, which

exceeds 6 francs (\$1.16), for male employees, is paid in the firework establishments, this trade requiring skill and experience of more than an ordinary kind. At the foot of the list, with an average of only 4.50 francs (86.8 cents) for ten hours' work, are found the employees of the glue and fertilizer factories and acid works, occupations unhealthful and repugnant, but requiring, upon the part of the worker, no special skill. The highest average wages for female employees are found in the manufactories of printers' inks and colors, the average exceeding 3 francs (57.9 cents) for ten hours in these industries. Considerable skill is required in grinding colors by hand. Following is the scale:

Male employees—(1) Fireworks establishments, (2) drugs, (3) fat rendering establishments, (4) printers' inks and colors, (5) vegetable oils, (6) petroleum refineries, (7) blacking and writing inks, (8) white lead and colors, (9) soap and perfumery, (10) gas works, (11) acids and fertilizers, (12) glue.

Female employees—(1) Printers' inks and colors, (2) blacking and writing inks, (3) white lead and colors, (4) drugs, (5) fat rendering establishments, (6) fireworks, (7) soap and perfumery.

*Wages by occupations.*—There are but few well-defined trades in this group. Employees in the acid rooms receive 5.50 francs (\$1.06) for twelve hours' work. The grinders and mixers, in the printing-ink establishments, and the makers of sealing wax earn about 8 francs (\$1.54) per day of ten hours; the suet and tallow melters, 7 to 8 francs (\$1.35 to \$1.54), and the female color grinders 4 francs (77.2 cents) for the same time. With the exception of special occupations of this character, the larger part of the employees are unskilled workmen, who can easily change from one industry to another, and earn from 4.25 to 5.50 francs (82 cents to \$1.06) per working day, or an average of 5 francs (96.5 cents), which is equivalent in these industries to about 4.70 francs (90.7 cents) per day of ten hours. Female employees average 2.70 francs (52.1 cents) per working day, or 2.55 francs (49.2 cents) for ten hours.

*Wages by occupations in the chemical industries.*

Occupations.	Time or piecework.	Average wages per working day.			
		<i>Francs.</i>			
<b>Petroleum refineries :</b>					
Foremen.....	Time.....	7.50 to 8.00	\$1.45	to	\$1.54
Distillers.....	do.....	4.40 to 6.00	.85	to	1.16
Rectifiers.....	do.....	5.00 to 6.00	1.06	to	1.16
Plumbers.....	do.....	6.50			1.25
Laborers.....	do.....	4.25 to 5.50	.82	to	1.06
<b>Acid and chemical works :</b>					
Foremen.....	do.....	5.00 to 12.00	.96½	to	2.32
Workmen.....	do.....	4.00 to 9.00	.77	to	1.74
<b>Manufacture of inks, colors, paints, and mul- cilage :</b>					
Foremen.....	do.....	6.00 to 10.00	1.16	to	1.93
Crushers and mixers.....	do.....	8.00			1.54
Material men.....	do.....	6.00			1.16
Workmen.....	do.....	4.25 to 7.00	.82	to	1.35
Laborers.....	do.....	2.50 to 5.00	.48	to	.96½

*Wages by occupations in the chemical industries—Continued.*

Occupations.	Time or piecework.	Average wages per working day.	
		<i>Francs.</i>	
Soap, perfumery, and candle making and fat-trying establishments:			
Tallow melters.....	Time.....	7.40	\$1.43
Soap makers.....	do.....	3.25 to 5.00	\$0.63 to .96½
Workers in suet trying establishments—			
Preparation.....	do.....	5.50	1.06
Hot room.....	do.....	5.55	1.07
Cleaning.....	do.....	5.00	.96½
Washing.....	do.....	5.30	1.02
Pressing.....	do.....	5.15	.98
At the slaughterhouses.....	do.....	6.45	1.24
Perfumery makers.....	do.....	4.50 to 5.00	.87 to .96½
Workwomen.....	Time and piece....	1.00 to 5.00	.19½ to .96½

*Time and piecework.*—Male employees are generally paid by time. The manufacture of vegetable oils constitutes an exception, all the workers being paid by the piece. Certain other exceptions are the fillers of carboys and a few employees in drug and firework establishments.

Female employees, on the contrary, are almost always paid by the piece, the exceptions being in the candle, soap, and perfumery industries. It is to be remarked in the industries of this group that employees paid by the piece earn generally higher wages than employees paid by time.

### III.—PAPER, RUBBER, AND BOOK-MAKING INDUSTRIES.

The operations of manufacturing in this group include many in which the raw material undergoes the action of heat, and these processes thus resemble, in a certain respect, some of those of the preceding group. These preliminary operations are generally followed by rolling, drawing, and other mechanical treatments, which finish the product.

The gutta-percha and rubber factories turn out finished products, such as clothing, shoes, and the various objects which are made from gutta-percha. The manufacture of paper and cardboard, on the other hand, furnishes raw material for many other industries, the greater part being destined for the use of the printer. In the rubber plants, powerful machinery and engines are required for heating, rolling, mixing, and drawing the raw material, the motor power per one hundred hands being as high as 180 horsepower. The manufacture of paper and cardboard also requires an important motor power, it being as high as 120 horsepower per one hundred hands.

In the other industries, however, the motor power is less important, varying from 25 horsepower in the manufacture of wall papers to 15 horsepower in the printing establishments, per one hundred employees.

*Employees.*—In the rubber and cardboard industries, the larger proportion of the male employees are laborers or unskilled workmen. The proportion of women and children is 25 to 30 per cent. These two industries require but little highly skilled labor, on account of the simplicity of their manufacturing processes. In the making of envelopes, blank books,

etc., and in the binding establishments, the operations of manufacturing are on a smaller scale, and the motor power is relatively insignificant; the male employees are more or less experienced, but, relatively, few in number. On the other hand, a large number of women and girls are employed, who are, generally, skilled workers, dexterity and quickness being indispensable qualities in the exercise of their occupations. The proportion of female employees is generally greater than 50 per cent of the entire working force—the art bookbinding trade being an exception, this employing a small but selected number of hands.

In chromo-lithography, the working force consists of skilled workmen to run the machines and presses; they are aided by an equal or greater number of young workers, or even children.

*Working time.*—Production, except in the case of daily newspapers, is generally limited to three hundred days per year, Sunday work not being usual. The book, magazine, and pamphlet finishing shops often run on Sundays, in order to finish up work which the printers are always in a hurry for. The difference between the average number of days of production and the average number of working days per employee varies from 1 to 6 per cent in the different industries. A working day in the rubber factories is generally eleven hours, though it is sometimes ten hours. In the cardboard factories, it varies from eight to twelve hours. In the wall-paper industry, it rarely varies from ten hours, and it is the same in the printing and binding establishments. It varies from nine to twelve hours in the blank-book and art-binding industries, and varies still more in the magazine, pamphlet, and book-finishing shops. The general average for all these industries is from ten to ten and one-half hours.

*Wages by industries.*—Wages are highest in the art-binding industries, exceeding an average of 8 francs (\$1.54) per day of ten hours for male employees, and 5 francs (96.5 cents) for female employees. The printing establishments come next on the list, averaging 7 francs (\$1.35) for male and 3.50 francs (62.5 cents) for female employees for a day of ten hours. Average wages are the lowest in the wall-paper industry, on account of the large number of youths and children employed. In the rubber, book-binding, and cardboard-making establishments, the average wage for male employees is less than 5.50 francs (\$1.06) per ten hours, and it varies from 2.50 to 3 francs (47.5 to 57.9 cents) for female employees.

The descending scale, according to the average wages paid per day of ten hours of the various industries of this group, is here presented:

Male employees—(1) Art binding, (2) printing establishments, (3) magazine, pamphlet, and book stitching and finishing shops, (4) paper making, (5) cardboard making, (6) rubber factories, (7) binding, (8) wall paper.

Female employees—(1) Art binding, (2) printing establishments, (3) paper making, (4) binding, (5) stitching shops and cardboard making, (6) rubber factories.



*Wages by occupation.*—The following table presents the average wages in most of the specific occupations of the rubber, paper, and book-making group:

*Wages by occupations in the paper, rubber, and book-making industries.*

Occupations.	Time or piecework.	Average wages for 10 hours.	
<i>Males.</i>			
Rubber and gutta-percha works :		<i>Francs.</i>	
Foremen .....	Time.....	5. 75 to 12. 70	\$1. 11 to \$2. 48
Rubber makers.....	do.....	4. 50 to 7. 90	. 87 to 1. 65
Gutta-percha makers.....	do.....	2. 75 to 6. 00	. 53 to 1. 16
Auxiliaries.....	do.....	6. 00 to 6. 50	1. 16 to 1. 25
Heel makers.....	Piece.....	5. 50	1. 06
Surgical-instrument makers.....	do.....	4. 50 to 5. 70	. 87 to 1. 10
Rope and cable coaters.....	Time.....	4. 35	. 83
Rubber clothing makers.....	do.....	2. 00 to 6. 00	. 38½ to 1. 16
Rubber tubing makers.....	do.....	2. 50 to 6. 00	. 48 to 1. 16
Rolling rubber.....	do.....	3. 75 to 6. 75	. 72 to 1. 30
Laborers.....	do.....	3. 00 to 6. 00	. 58 to 1. 16
Wall paper works :			
Foremen.....	do.....	8. 00 to 15. 00	1. 54 to 2. 89
Engravers.....	do.....	4. 75	. 92
Painters.....	do.....	6. 00 to 10. 00	1. 16 to 1. 93
Hand printers.....	Time and piece...	5. 00 to 9. 00	. 96½ to 1. 74
Machine printers.....	Time.....	5. 00 to 11. 00	. 93½ to 2. 12
Gilders.....	do.....	3. 90	. 75
Rollers.....	Time and piece...	3. 25 to 5. 50	. 63 to 1. 06
Varnishers.....	Piece.....	8. 75 to 10. 00	1. 69 to 1. 93
Machine sizers.....	Time.....	7. 50 to 8. 75	1. 45 to 1. 69
Laborers.....	do.....	3. 25 to 4. 50	. 63 to . 87
Printing, bookbinding, and sewing industries :			
Compositors.....	Piece.....	5. 50 to 9. 00	1. 06 to 1. 74
Do.....	Time.....	5. 50 to 8. 00	1. 06 to 1. 54
Pedalists.....	do.....	5. 00 to 7. 00	. 96½ to 1. 35
Lithograph machine printers.....	do.....	10. 50	2. 03
Typograph machine printers.....	do.....	10. 50	2. 03
Layers.....	do.....	3. 50	. 68
Lifters.....	do.....	2. 50	. 48
Proof readers.....	do.....	8. 50	1. 64
Stereotypers.....	do.....	6. 00 to 10. 00	1. 16 to 1. 93
Rollers.....	do.....	6. 50	1. 25
Grainers.....	do.....	5. 00 to 6. 00	. 96½ to 1. 16
Couchers.....	do.....	7. 00	1. 35
Trimmers.....	do.....	4. 00	. 77
Cutters.....	do.....	6. 00 to 6. 50	1. 16 to 1. 25
Glazers.....	do.....	5. 00 to 7. 00	. 96½ to 1. 35
Paper makers.....	do.....	5. 50 to 7. 50	1. 06 to 1. 45
Stitchers.....	Time and piece...	7. 00	1. 35
Bookbinders.....	do.....	6. 00	1. 16
Art bookbinders.....	Time.....	7. 00 to 9. 00	1. 35 to 1. 74
Press printers.....	Time and piece...	7. 00	1. 35
Copperplate printers.....	Piece.....	7. 00	1. 35
Foremen.....	Time.....	5. 30 to 26. 00	1. 02 to 5. 12
Lithograph writer and designer.....	do.....	9. 00	1. 74
Transporter.....	do.....	9. 00	1. 74
Transferer.....	do.....	9. 00	1. 74
Engravers.....	do.....	9. 50	1. 83
<i>Females.</i>			
Printing, bookbinding, and sewing industries.			
Compositors.....	Piece.....	3. 00 to 6. 00	. 58 to 1. 16
Stitchers.....	do.....	4. 50	. 87

*Wages by occupations in the paper, rubber, and book-making industries—Continued.*

Occupations.	Time or piecework.	Average wages for 10 hours.	
<i>Females—Continued.</i>			
Printing, bookbinding, and sewing industries—Continued.			
Counters.....	Time and piece...	<i>Francs.</i>	
Packers.....		2.50 to 4.00	\$0.48 to \$0.77
Cutters.....			
Pasteboard makers.....			
Typographers.....	Time.....	2.25 to 5.00	.43½ to .96½
Stampers.....	Piece.....	2.00 to 2.50	.38½ to .48
Rollers.....	do.....	3.00 to 3.50	.58 to .68
Gilders.....	Time.....	3.50	.68
Binders.....	do.....	4.00 to 5.50	.77 to 1.06
Rulers.....	do.....	4.05	.80
Forewomen.....	do.....	3.00 to 10.00	.58 to 1.93

*Time and piecework.*—Wages are paid by the time in the rubber factories, and, generally, in the cardboard and special kinds of paper factories. Female employees are paid by the piece in making envelopes, and in the binding and book-making industries. In the wall paper factories, the hand printers, the rollers, and some others are paid by the piece generally. In the printing establishments, composition is paid by the piece or task; pressmen are paid by time, and printers by both time and piece. If a comparison be made between the wages earned by employees engaged in the same occupation and in the same establishment, by time and piecework, not much difference will be observed. The advantage is sometimes on one side and sometimes on the other. This is true even in comparing different establishments. The rate agreed to by the union for setting type is 65 centimes (12.5 cents) per 1,000 letters, but when the compositor works by time he is supposed to accomplish as much as when he works by the piece, and is paid accordingly.

If, in the preceding table, a comparison be made between the hand pressmen and the machine pressmen it will be seen that the latter have somewhat the advantage in respect to wages. This difference would be augmented still further were one worker allowed to run two or more machine presses, but to this innovation the unions are irrevocably opposed, on account of the decrease in wages which would result for the hand pressmen, and, eventually, for the machine pressmen as well.

## IV.—FUR AND LEATHER INDUSTRIES.

Labor in these industries is generally performed by hand, machinery playing but an inferior rôle. In consequence, many of the establishments for preparing furs and leather are run on a small scale, and the manufacture of the various objects from these materials is very generally given out to hands who work at home. The horsepower employed per one hundred workers is relatively insignificant, not exceeding from 29 to 40 in the hair

and fur cutting establishments, 70 in the manufacture of morocco leather, 40 in the establishments for the preparation of furs and leather, 20 in the dyeing establishments, and 30 in the boot and shoe factories. In the other industries, the motor power is too small to mention.

*Employees.*—In the dyeing and preparation of furs and hides, many laborers are employed, though a certain number of highly skilled workmen, such as curriers, etc., are required. In the preparatory industries, women and children are employed to the extent of 6 per cent of the working force, while in the dyeing industries, their proportion amounts to 42 per cent. The fur establishments employ 60 per cent of women and children, and in the manufacture of different objects of fur and leather, the proportion is equally great. The manufactories of harness and saddles, however, are an exception to this rule, the proportion of women and children being relatively small, these industries largely employing skilled workers, who have served a considerable apprenticeship.

*Working time.*—A certain number of tanning establishments are run on Sundays, certain employees working all day and others until noon. In the fur establishments, where production increases in the autumn months, Sunday work is the rule during the busy season. Taken together, the average number of working days per industry for this group is three hundred and four, and the average number of working days per employee varies from this from 1 to 10 per cent less; in glove making, it even amounts to 20 per cent less. In the preparation of furs and leather, the average duration of a working day is from ten to eleven hours, this duration not varying much throughout the year. It is the same in the fur establishments and in the manufacture of diverse objects in leather. In the glove factories, it is less than ten hours. The dyeing establishments present a greater variation in the length of the working day, according to the importance of the orders on hand, varying from seven to twelve hours.

*Wages by industries.*—Average wages for male employees are highest in the glove and fur trades, which require a large number of skilled workers. The purse and pocketbook hands come next with an average of more than 6 francs (\$1.16) per day of ten hours. The lowest average for male employees is paid in the boot and shoe factories, and in the preparatory industries of furs and hides. The latter employ many unskilled laborers, which reduces the general average, and in the boot and shoe industries, a large proportion of the work is given out to employees who work at their homes, and their wages do not figure in the average of these industries, but it is stated that they do not earn more than the average, because this work is much sought after and competition reduces their earnings. The average wages for female employees throughout this group are about 3 francs (57.9 cents) for ten hours' work.

*Wages by occupation.*—It appears that felt makers gain the highest wages in this group, as their occupation not only requires a knowledge of the trade, but also moral character to resist the temptation to intoxication.

*Wages in the fur and leather industries.*

Occupations.	Time or piecework.	Average wages for 10 hours.	
<i>Males.</i>		<i>Francs.</i>	
Foremen.....	Time.....	6.70 to 12.00	\$1.29 to \$2.32
Stampers.....	do.....	5.10	.98
Fur cutters.....	do.....	8.50	1.64
Drawers.....	Piece.....	6.30	1.20
Shavers.....	Time.....	6.35	1.22
Polishers.....	do.....	4.85	.94
Splitters.....	Piece.....	5.85 to 12.50	1.13 to 2.42
Felt makers.....	do.....	9.50	1.83
Trimmers.....	do.....	5.00 to 10.00	.96½ to 2.03
Machine shearers.....	do.....	6.00	1.16
Glazers.....	do.....	5.00	.96½
Hookers.....	Time.....	5.00	.96½
Tanners.....	Time and piece...	4.00 to 8.50	.77 to 1.64
Cowhide dressers.....	Piece.....	6.50 to 8.50	1.25 to 1.64
Chief fleshers.....	do.....	8.00	1.54
Furriers.....	Time.....	8.00 to 10.00	1.54 to 1.93
Fur dressers.....	do.....	5.00 to 6.50	.96½ to 1.25
Hide dressers.....	Piece.....	7.00 to 10.00	1.35 to 1.93
Leather dressers.....	Time and piece...	6.00	1.16
Curriers.....	do.....	6.00 to 8.00	1.16 to 1.54
Hide sawyers.....	Piece.....	4.50 to 5.00	.87 to .96½
Beaters.....	do.....	7.00 to 8.50	1.35 to 1.64
Saddle makers.....	do.....	8.50	1.64
Harness makers.....	do.....	6.50	1.25
Finishers.....	do.....	4.90	.94
Bridle makers.....	do.....	6.50	1.25
Shoe cutters.....	Time and piece...	5.50	1.06
Shoe stitchers.....	Time.....	5.50 to 6.50	1.06 to 1.25
Shoe sewers.....	do.....	6.50	1.25
Boot and shoe makers.....	Piece.....	5.00 to 5.50	.96½ to 1.06
Pocketbook cutters.....	Time and piece...	7.50	1.45
Pocketbook finishers.....	Piece.....	7.00 to 8.00	1.35 to 1.54
Glove cutters.....	Time and piece...	7.00 to 8.00	1.35 to 1.84
<i>Females.</i>			
Fur cutters.....	Time.....	4.00	.77
Bristle pullers.....	Piece.....	3.00	.58
Blowers.....	Time.....	3.50	.68
Lamb's-wool cutters.....	do.....	3.50	.68
Fur sewers.....	do.....	2.50 to 3.50	.48 to .68
Fur makers.....	Piece.....	3.00 to 4.00	.58 to .77
Leather dyers.....	do.....	2.50 to 3.50	.48 to .68
Saddle stitchers.....	Time.....	2.70	.52
Shoe stitchers.....	do.....	3.00	.58
Shoe cutters.....	do.....	2.25 to 3.00	.43½ to .58
Pocketbook gluers.....	do.....	2.50	.48
Forewomen.....	do.....	4.00 to 5.70	.77 to 1.10

*Time and piecework.*—Certain classes of workers, such as hide dressers, felt makers, sorters, etc., are invariably paid by the piece. Payment by time and piece has been rarely observed in the same establishment for the same class of work, hence a comparison which is direct can not be made between them, but for different establishments this is possible, and the table following presents some comparisons of this character.

*Comparison of wages paid by time and piece in the different establishments in the fur and leather business.*

Establishments.	Occupations.	Time or piece-work.	Wages per day.	
			Francs.	
A.....	Curriers.....	Time.....	5.25 to 6.25	\$1.01 to \$1.21
B.....	.....do.....	.....do.....	4.50 to 6.00	.87 to 1.16
C.....	.....do.....	Piece.....	7.00 to 9.00	1.35 to 1.74
D.....	.....do.....	.....do.....	4.75 to 6.00	.92 to 1.16
E.....	Leather polishers.....	Time.....	6.50 to 7.50	1.25 to 1.45
F.....	.....do.....	.....do.....	4.00 to 6.00	.77 to 1.16
G.....	.....do.....	Piece.....	9.00 to 11.50	1.74 to 2.22
H.....	.....do.....	.....do.....	5.00 to 8.50	.96½ to 1.64
I.....	Saddlers.....	Time.....	5.35	1.03
	Do.....	Piece.....	7.80	1.51
	Harness makers.....	Time.....	5.90	1.14
	Do.....	Piece.....	6.00	1.16
	Finishers.....	Time.....	5.65	1.09
	Do.....	Piece.....	4.40	.85
J.....	Shoe cutters.....	Time.....	6.00	1.16
	Do.....	Piece.....	5.50	1.06
K.....	Glove cutters (male).....	Time.....	7.00 to 8.25	1.35 to 1.59
	.....do.....	Piece.....	7.15	1.38

#### V.—TEXTILE INDUSTRIES.

This group naturally subdivides into two, the first being the textile industries proper, such as the weaving, spinning, dyeing, and finishing establishments, the second being composed of those industries which work up the products of the foregoing into various finished forms, such as clothing, hats, artificial flowers, etc. This latter subgroup of industries, with the exception of certain large military furnishing establishments and hat factories, is carried on in a small way, much of the work being given out to employees who take it to their homes.

In the first subdivision, the motor power per one hundred hands often exceeds 100 horsepower, as in rope factories; it averages 60 horsepower in the large dyeing establishments, and varies from 10 to 20 horsepower in the other industries. In the second subdivision, the horsepower employed does not in general exceed 25 for each one hundred hands, and often no mechanical power whatever is employed.

*Employees.*—The textile industries proper do not require, on the part of their employees, the exercise of any great degree of intelligence. Experience and a certain dexterity are the necessary requisites. It results that they are for the most part workers who possess a certain amount of skill, but who could not properly be designated as employees possessed of a trade. The dyeing, bleaching, finishing, and fulling establishments employ a large number of unskilled laborers. Skilled workmen are more largely employed in the second subdivision of this group, a certain number of which are required to exercise a relatively high degree of intelligence and taste.

The textile industries in general employ the largest proportion of female employees of all the groups here treated of, it being as high as 50 per cent

of the entire working force. Certain industries, such as corset, artificial flower, and feather making, employ female hands altogether. In the dyeing establishments, however, the proportion is small.

*Working time.*—With the exception of the dyeing establishments, where there is often great pressure to complete orders, the industries of this group are not run on Sundays. The average number of working days per employee runs from 6 to 7 per cent less than the days of production. The average duration of a working day is ten and one-half hours, but from this average there are wide variations. In the rope and weaving factories, it is ten or eleven hours throughout the year; in the upholstery industry, it is nine or ten hours; and in artificial flower and feather making, it is ten hours, which, however, varies frequently for a large number of employees. In the other industries, variations are from seven to thirteen hours. In the dyeing and cleaning establishments, for example, there is no fixed time, the duration of a working day depending entirely upon the importance of the orders on hand.

*Wages by industries.*—The highest average wages for male employees in this group are paid in the clothing and upholstery trades, the average rate per day of ten hours exceeding 9 francs (\$1.74) for male employees. In the silk-weaving industry, which holds the third place in the table, the average for males is 6.70 francs (\$1.29) for ten hours. The lowest average is found in the dyeing works and in the finishing of tissues, it being less than 5 francs (96½ cents) for the same time.

The artificial flower and feather industry heads the list as paying the highest average wages per day of ten hours for female employees, namely, 4 francs (77.2 cents). The other industries for females, as they follow one another in the table, pay an average somewhat higher than 3 francs (57.9 cents) until the rope-making industry is reached. The succeeding industries pay an average under 3 francs, the lowest being for females, in the dyeing works and the finishing of tissues, where it is less than 2.50 francs (48 cents) per day of ten hours. The following shows the descending scale of average wages paid per day of ten hours in the textile industries:

Male employees—(1) Men's clothing, (2) upholstering, (3) silk weaving, (4) artificial flowers and feathers, (5) bedquilt making, (6) hosiery making, (7) general clothing concerns, (8) hat factories, (9) cloth bleaching, (10) dyeing and cleaning, (11) felt making, (12) manufacture of military clothing, (13) yarn dyeing, (14) embroidery making, (15) twist mills, (16) rope making, (17) dyeing and finishing of tissues.

Female employees—(1) Artificial flowers and feathers, (2) upholstering, (3) bedquilt making, (4) cloth bleaching, (5) embroidery making, (6) rope making, (7) dressmaking, (8) yarn dyeing, (9) military clothing making, (10) twist mills, (11) hat factories, (12) silk weaving, (13) corset making, (14) general clothing concerns, (15) hosiery making, (16) felt making, (17) dyeing and finishing of tissues.

*Wages by occupations in the textile industries.*

Occupations.	Time or piecework.	Average wages per day of 10 hours.			
<i>Males.</i>					
Rope and cord making and twist mills :		<i>Francs.</i>			
Foremen.....	Time.....	4.65 to 10.80	\$0.90	to	\$2.09
Machinists.....	do.....	4.75 to 9.80	.92	to	1.89
Laborers—					
Under 20 years.....	do.....	2.70 to 4.05	.52	to	.78
Over 20 years.....	do.....	4.90			.81
Flax-cord makers.....	do.....	4.05 to 5.40	.78	to	1.04
Twister of cords.....	Piece.....	7.50			1.45
Rope makers.....	do.....	3.60 to 7.65	.69	to	1.48
Splicers.....	do.....	3.60 to 7.65	.69	to	1.48
Hawser makers.....	Time.....	2.70 to 5.70	.52	to	1.10
Silk weaving, yarn dyeing, finishing of tissues, and manufacture of hosiery and embroidery :					
Silk weavers.....	Piece.....	6.00 to 7.50	1.16	to	1.45
Dyers—					
Silk.....	Time.....	6.40			1.23
Cotton.....	do.....	5.85			1.13
Wool.....	do.....	4.95			1.05
Yarn.....	do.....	3.60 to 8.10	.69	to	1.56
Fullers and pressers.....	do.....	4.25 to 5.50	.82	to	1.06
Folders.....	do.....	3.50 to 5.25	.67½	to	1.01
Weavers.....	Piece.....	7.15 to 10.00	1.38	to	1.93
Foremen.....	Time.....	4.50 to 12.60	.87	to	2.46
Upholstering, military furnishings, etc. :					
Upholsterers.....	do.....	3.25 to 10.50	.63	to	2.03
Do.....	Piece.....	8.25 to 12.00	1.59	to	2.32
Tailors.....	Time.....	6.50			1.25
Military cap makers.....	do.....	7.00			1.35
Manufacture of men's and women's clothing :					
Cutters.....	do.....	16.65			3.50
Do.....	do.....	7.00 to 13.00	1.35	to	2.51
Alterers.....	do.....	7.50 to 9.00	1.45	to	1.74
Basters.....	do.....	6.50			1.25
Sample makers.....	Time.....	10.40			2.02
Examiners.....	do.....	1.50 to 8.50	.29	to	1.64
Pressers.....	do.....	6.00			1.16
Foremen.....	do.....	10.00 to 20.00	1.93	to	3.86
Straw and felt hat factories :					
Straw hat makers.....	do.....	4.70			.91
Sizers.....	do.....	4.25			.82
Shapers.....	Piece.....	6.20			1.19
Finishers.....	Time.....	6.00			1.16
Do.....	Piece.....	4.05			.78
Dyers.....	Time.....	3.00 to 6.00	.58	to	1.16
Form makers.....	do.....	8.00 to 10.00	1.54	to	1.93
Dressers and trimmers.....	do.....	6.50			1.25
Foremen.....	do.....	7.00 to 12.00	1.35	to	2.32
Dyeing, cleaning, and bleaching works :					
Cleaners.....	do.....	5.65			1.09
Colorers.....	do.....	5.65			1.09
Dyers.....	do.....	4.50 to 6.00	.87	to	1.16
Printers.....	do.....	5.00 to 6.00	.96½	to	1.16
Bleachers.....	do.....	4.50 to 7.50	.87	to	1.45
Ironers.....	do.....	4.50 to 6.75	.87	to	1.30
Folders.....	do.....	5.75			1.10
<i>Females.</i>					
Rope, cord, and string making, twist mills :					
Twisters.....	Piece.....	1.35 to 4.05	.26	to	.78
Ball winders.....	do.....	3.00			.58

*Wages by occupations in the textile industries—Continued.*

Occupations.	Time or piecework.	Average wages per day of 10 hours.			
<i>Females—Continued.</i>					
Rope, cord, and string making, twist mills—Continued.		<i>Francs.</i>			
Bobbin girls.....	Piece.....	3.40			\$0.66
Lappers.....	do.....	3.55			.69
Winders.....	do.....	2.25 to 3.00	\$2.43½	10	.58
Forewomen.....	Time.....	3.00 to 5.00	.58	to	.96½
Silk weaving:					
Wet girls.....	do.....	2.00 to 2.50	.38½	to	.48
Reelers.....	do.....	2.75 to 3.25	.53	to	.63
Warpers.....	do.....	3.00 to 3.50	.58	to	.68
Young girls.....	do.....	1.00 to 1.50	.19½	to	.29
Dyeing and finishing tissues:					
Dyers.....	do.....	2.95			.57
Girls at the frame.....	do.....	2.50			.48
Folders.....	do.....	2.65			.51
Finishers.....	do.....	1.80 to 2.70	.35	to	.52
Upholstering (sewing hands).....	do.....	3.00 to 5.75	.58	to	1.11
Military furnishings (sewing hands).....	do.....	4.00			.77
Women's clothing (garment hands).....	Piece.....	2.50 to 4.00	.48	to	.77
Corset making:					
Cutters.....	Time.....	3.10			.60
Stitchers.....	do.....	2.05			.39½
Do.....	Piece.....	3.15			.60½
Finishers.....	Time.....	2.15			.41½
Do.....	Piece.....	2.70			.52
Straw and felt hat factories:					
Straw hat hands.....	Time.....	2.70			.52
Sewing hands.....	Piece.....	2.90			.56
Formers.....	Time.....	2.70			.52
Mounters.....	Piece.....	2.00			.38½
Frame makers.....	do.....	2.95			.57
Machine hands.....	do.....	2.95			.57
Blowers.....	Time.....	3.00			.58
Fullers.....	do.....	2.00 to 4.00	.38½	to	.77
Pouncers.....	Piece.....	1.50 to 5.00	.29	to	.96½
Trimmers.....	do.....	2.50 to 6.00	.48	to	1.16
Forewomen.....	Time.....	5.00 to 6.75	1.06	to	1.69
Artificial flower and feather making:					
Cutters.....	do.....	5.00			.96½
Petal dyeing.....	do.....	6.00			1.16
Workers.....	Time and piece...	3.25 to 6.00	.63	to	1.16
Feather makers.....	Time.....	4.25			.82
Do.....	Piece.....	3.00 to 8.00	.58	to	1.54
Flower makers.....	do.....	3.00 to 8.00	.58	to	1.54
Mounters.....	do.....	4.05			.78
Forewomen.....	Time.....	7.00			1.35
Dyeing, cleaning, and bleaching establishments:					
Bleachers.....	do.....	3.60			.70
Ironers.....	do.....	2.75 to 5.75	.53	to	1.11
Dyers.....	do.....	1.50 to 2.50	.29	to	.48

*Time and piecework.*—In the rope factories and the dyeing and cleaning establishments, payment of male employees is generally by time. The silk weavers and embroiderers are paid by the piece. In the other industries, both modes of payment prevail. Female employees are more often paid by the piece, though certain employees in the hat factories and in the manufac-



ture of artificial flowers and clothing are paid by time. In the upholstering and silk-weaving industries they are paid by the hour. Some comparison can be made between payment by time and piece in the following cases :

*Wages paid by time and piece in certain industries in the textile group.*

Industries.	Occupations.	Time or piecework.	Average wages.	
			<i>Francs.</i>	
Upholstery.....	Upholsterers (males).....	Time.....	6.50	\$1.25
Do.....	do.....	Piece.....	10.00	1.90
Straw hat factory.....	Finishers (males).....	Time.....	6.60	1.27
Do.....	do.....	Piece.....	4.50	.87
Corset factory.....	Stitchers (females).....	Time.....	2.05	.39½
Do.....	do.....	Piece.....	3.15	.61
Manufacture of artificial flowers.	Flower makers (females).....	Time.....	4.25	.82
Do.....	do.....	Piece.....	5.00	.96½

It has been noted that in the manufacture of knitted wear, the weavers are sometimes paid by the hour, and make about 6 francs (\$1.16) per day, whereas, in other cases, they are paid by the piece and earn, on an average, 8.50 francs (\$1.64) per day of ten hours.

From these diverse results, it is difficult to arrive at a conclusion as to which of the two systems presents, on the whole, the greatest benefit to the worker. It is to be remarked, however, that in the majority of cases, where work is paid for by the piece, the average time necessary for its accomplishment is pretty accurately known in advance, the result being that the rate of pay does not differ materially from what it would be if the work was paid for by time.

#### VI.—WOOD INDUSTRIES.

For convenience, this group is subdivided into two, the first being those industries which work wood in its rough form, such as wagon making, carpentering, saw mills, etc.; the second includes cabinetmaking, furniture making, model making, toy making, and other similar industries.

The saw mills, box factories, molding factories, etc., require a motor power of considerable force—100 horsepower to each one hundred hands. In the lighter industries, 15 horsepower per one hundred hands is the maximum. Generally these industries are conducted in small shops, there being some exceptions, as in the case of factories.

*Employees.*—These industries give employment to a larger proportion of skilled workmen than any other, not excepting even the metal group, in which machinery plays such an important part that skilled workmen are displaced, whereas, in this group, the greater part of the operations are performed by hand, and, consequently, skill of a relative high order is required. The few laborers who are employed are occupied in works of a mechanical nature, such as occur in molding and box factories, saw mills, etc. The large number of real mechanics are called upon to exercise not only skill but intelligence as well, either to understand the general plan of a piece of work

or to carry out specific designs. But few women and children find employment in the first subdivision of this group, though they constitute as much as 35 per cent of the working force in the box factories. They are more numerous in the second subdivision, constituting 15 per cent of the working force in the furniture and toy factories, where they are employed in varnishing and upholstery work. In the manufacture of dolls and manikins, their numbers reach as high as 50 and even 70 per cent of the working force.

*Working time.*—The carriage and wagon making shops and factories run all the week days, and, very frequently, half a day on Sunday. Sunday work in the carpentering and joining shops is quite regular, and production is nearly continuous throughout the year. In the other industries, the days of production do not exceed three hundred and ten in the year. The variation between the days of production and the actual number of working days per employee is from 2 to 11 per cent, the highest percentage being in the wheelwright shops, modeling, picture, and other frame industries.

The average length of a working day per industry for the entire year varies from nine and three-fourths hours for the wheelwrights to eleven and one-half hours in the box factories. The general duration is about ten and one-half hours. The variation at different periods of the year is from nine to eleven hours for the wheelwrights and employees of the piano and organ factories, seven to eleven hours for the carpenters and joiners, and from eight to twelve hours in the other industries, among which will be found some which vary within the limits named and others which have the greatest regularity throughout the year. In the furniture factories, the employee regulates the length of his day according to his pleasure, as he is paid by the piece. In the upholstering departments, the day is fixed at nine hours throughout the year.

*Wages by industries.*—The industries in this group range in a descending scale, according to the average wages paid per day of ten hours, as follows:

Male employees—(1) Furniture factories, (2) toy making, (3) model making, (4) manufacture of manikins, (5) carpentering and joining, (6) packing-case manufacturing, (7) manufacture of pianos and organs, (8) manufacture of traveling articles, (9) wagon making, (10) wood dyeing, (11) parts of musical instruments, (12) saw mills, (13) frame making, (14) canes and measures, (15) box factories, (16) manufacture of dolls.

Female employees—(1) Furniture factories, (2) manufacture of traveling articles, (3) toy manufacturing, (4) manufacture of frames, (5) manufacture of pianos and organs, (6) manufacture of parts of musical instruments, (7) manufacture of dolls, (8) box factories.

The average wages for male employees in the first four of the above industries exceeds 7 francs (\$1.35) per day of ten hours. They decline to less than 6 francs (\$1.16) in descending the scale to the saw mills, and touch the lowest point—under 5 francs (96.5 cents) per day—in the manufacture of dolls. The average wages for female employees vary from 4 francs (77.2 cents) which is the highest, to below 2.50 francs (48.2 cents) per day of ten hours,

*Wages by occupations in the wood industries.*

Occupations.	Time or piecework.	Average wages observed for day of 10 hours.	
<i>Males.</i>			
Wagon making :		<i>Francs.</i>	
Foremen.....	Time.....	8.00 to 16.00	\$1.54 to \$3.08
Blacksmiths.....	do.....	5.00 to 10.00	.96½ to 1.93
Carpenters.....	do.....	7.00	1.35
Painters.....	do.....	4.50 to 8.50	.87 to 1.64
Wheelwrights.....	do.....	7.00	1.35
Do.....	Piece.....	8.30	1.60
Strikers.....	Time.....	5.00	.96½
Filers.....	Time and piece...	7.10	1.37
Molding factories :			
Molding hands.....	Time.....	7.00	1.35
Finishers.....	Piece.....	6.60	1.27
Dovetailers, etc.....	Time.....	6.50 to 7.50	1.25 to 1.45
Sawyers.....	do.....	6.00 to 7.50	1.16 to 1.45
Furniture factories :			
Fretters.....	do.....	11.00	2.12
Cabinetmakers.....	Time and piece...	6.00 to 13.00	1.16 to 3.47
Sculptors.....	do.....	6.30 to 18.00	1.26 to 3.47
Upholsterers.....	Piece.....	10.00	1.93
Waxers.....	Time.....	5.35	1.03
Fluters.....	Time and piece...	7.55	1.46
Encausticers.....	Time.....	6.10	1.18
Turners.....	Piece.....	6.65	1.28
Varnishers.....	Time.....	6.15	1.19
Carpenters.....	Time and piece...	4.00 to 10.00	.77 to 1.93
Polishers.....	do.....	6.00	1.16
Mounters.....	Time.....	6.50 to 10.00	1.25 to 1.93
Chiselers.....	do.....	6.50 to 10.00	1.25 to 1.93
Foremen.....	do.....	7.00 to 33.50	1.35 to 6.46
Piano and organ factories :			
Tuners.....	do.....	16.00	3.09
Chief organ makers.....	Time.....	8.00 to 11.00	1.54 to 2.12
Organ makers.....	do.....	6.00 to 8.50	1.16 to 1.64
Cord mounters.....	Piece.....	7.00 to 9.00	1.35 to 1.74
Finger-board makers.....	do.....	8.00	1.54
Silk layers.....	do.....	5.00	.96½
Finishers.....	do.....	7.00	1.35
Levelers.....	do.....	6.00	1.16
First adjusters.....	Piece.....	8.00 to 10.00	1.54 to 1.93
Second adjusters.....	do.....	6.00 to 7.00	1.16 to 1.35
Repairers.....	Time.....	7.00	1.35
Foremen.....	do.....	9.00 to 16.00	1.74 to 3.09
Various industries :			
House carpenters.....	do.....	7.00	1.35
Sawyers in mills.....	do.....	6.15	1.18
Planers.....	do.....	5.75	1.11
Cross sawyers.....	do.....	7.50	1.45
Floor layers.....	Time and piece...	7.75	1.50
Turners.....	do.....	7.20	1.39
Machine modelers.....	Time.....	8.00	1.54
Frame ornamenters.....	Piece.....	4.00 to 7.00	.77 to 1.35
Frame gilders.....	do.....	6.50	1.25
<i>Females.</i>			
Box nailers.....	Piece.....	2.15	.41½
Frame burnishers.....	do.....	3.00	.58
Glueers.....	Time.....	2.00 to 3.40	.38½ to .67
Doll finishers.....	Piece.....	1.75 to 5.00	.34 to .96½
Doll dressers.....	Time.....	2.90	.56
Doll colorers.....	Piece.....	1.75 to 5.00	.34 to .96½
Fan painters and mounters.....	do.....	4.50 to 20.00	.87 to 3.86

The maximum wages paid to foremen in furniture factories are exceptional.

*Time and piecework.*—Wheelwrights, carpenters, joiners, sawyers, and modelers are generally paid by the hour. In the furniture, piano, and organ factories, payment is generally by the piece. The following comparisons throw some light upon the two methods of payment:

*Wages paid by time and piece in the wood industries.*

Establishments.	Occupations.	Time or piece-work.	Wages.	
			France.	
Wagon factory.....	Wheelwrights.....	Time.....	7.00	\$1.35
Do .....	.....do.....	Piece.....	8.30	1.60
Carpenter shop.....	Carpenters.....	Time.....	7.00	1.39
Do .....	.....do.....	Piece.....	6.10	1.18
Furniture factory.....	Joiners.....	Time.....	7.20	1.39
Do .....	.....do.....	Piece.....	7.00	1.35
Cabinet shop.....	Cabinetmakers.....	Time.....	7.20	1.39
Do .....	.....do.....	Piece.....	8.00	1.54
Whip and cane factory.....	Planers.....	Time.....	6.00 to 8.00	\$1.16 to 1.54
Do .....	.....do.....	Piece.....	5.00 to 7.00	.96½ to 1.35
Do .....	Varnishers.....	Time.....	3.50 to 7.00	.67½ to 1.35
Do .....	.....do.....	Piece.....	5.00 to 7.00	.96½ to 1.35

#### VII.—METAL GROUP.

Metallurgical operations are excluded from this group, as works of this character (those which extract metals from the ores) do not exist in the department of the Seine. The industries here dealt with are those which work metals already extracted from the mineral, and include such as foundries, rolling mills, copper works, wire works, machine works, bronze works, the manufacture of tin plate and wares, plating, and the various industries employing the precious metals, such as the manufacture of jewelry, etc.

Machinery plays an important part in the working of the common metals, but owing to the diversity of products manufactured, the power employed varies widely. Some of the largest and most important works are found in these industries. At the same time small shops, and even employees who work at their homes, are abundant. While 100-horsepower per one hundred hands is employed in the rolling mills, the other industries do not ordinarily employ more than 25-horsepower for the same number of hands, with the exception of the wire works. Finally, there are many shops where no mechanical power whatever is employed.

*Employees.*—The employees of this group differ widely in respect to the skill and intelligence they are required to exercise. Those working without the aid of machines—such as locksmiths, fitters, coppersmiths, tinsmiths, jewelers, etc.—often possess a high degree of skill and intelligence, their trades requiring them to execute works from designs or by processes, the learning of which has required a long apprenticeship and much experience.

Those who work with machinery may be divided into two categories, *i. e.*, those who follow occupations which demand a knowledge of design and a long experience in their trade, together with skill and intelligence in proportion as their machines are complicated, and those who carry on operations which are always of the same character, and which require no intelligence and not even skill. These latter do not even make the tools with which they work; they are, therefore, unskilled laborers, who are merely called upon to acquire a certain degree of dexterity, and to watch their machines. This latter class have been more or less displaced by women and children. These female employees and children average 5 per cent of the working force in the iron and steel works, 20 per cent in the rolling mills, and 50 per cent in the manufacture of tinware, buttons, and in the gold-beating industry. In the other industries, they average 24 per cent of the working force.

*Working time.*—With the exception of the manufacture of iron for constructive purposes, it is rare that any of the industries of this group work on Sundays. In certain cases, where the work on hand is pressing, a certain number of employees may come to the shops for half a day on Sunday, but seldom for the whole day.

The average number of days of production for this whole group is three hundred and three. The average number of working days per employee in the iron industries ranges from 1 to 9 per cent less than the days of production. In the precious-metal industries, it is 4 per cent less. The manufacture of copper and brass for building purposes, the brass foundries, and the manufacture of tinware and other products show the greatest average loss of time in reference to production for the worker, it being as high as 15 per cent in the first mentioned of these industries. The average duration per industry of a day's work varies from nine and three-fourths to ten and three-fourths hours, the general average being ten and one-half hours. Some particulars are presented for the following industries: In iron works, a day varies from nine to twelve hours. It is rarely nine hours, but runs more frequently from ten to eleven and eleven to twelve hours. In constructions in iron, the day varies according to the season, it being nine hours during one and ten hours during another, and sometimes eleven hours. In rolling mills, ordinarily, ten or eleven hours, with exceptions of eight or nine hours, and more frequently twelve hours. In iron furniture and wire works, eleven hours the year round, with rare exceptions of ten hours. In boiler works the time varies from ten to eleven hours generally, with exceptions of nine, and, sometimes, twelve and thirteen hours. In iron foundries, ten or eleven hours throughout the year. In machine works, the working day varies between ten and eleven hours, with rare exceptions of eight or twelve and more hours. In copper works and foundries, ordinarily, ten and eleven hours—rarely nine or twelve hours. In works of art in bronze, gas burners, etc., the general duration is ten hours, but sometimes twelve hours, and rare exceptions of seven, eight, and nine hours. In the manufacture of

faucets and other objects in brass, ten to eleven hours, with exceptions of twelve hours. In the manufacture of metal buttons, nearly always ten hours, with exceptions of seven and eight hours and eleven and twelve hours. In the manufacture of tinware, very little regularity exists; generally it is between ten and eleven hours, but it fluctuates at times from eight to twelve hours. In gold and silver plating, goldsmiths' works, and manufacture of jewelry, the day is ordinarily ten hours, with exceptions of from nine to thirteen hours.

The manufacture of iron for building purposes and the construction of iron buildings have their season of greatest production during the summer and autumn months, when building operations are being pushed. The rolling mills, manufactories of gas apparatus, and copper and brass works increase their production at the approach of the winter months. The busiest season for the industries which work the precious metals is at the close of the year.

*Wages by industries.*—The jewelers, and the fitters in the manufacture of mechanical iron bedsteads, head the list of male employees, with average wages superior to 8 francs (\$1.55) for a day of ten hours. The other industries in descending the scale to and including the manufacture of faucets pay an average wage higher than 7 francs (\$1.35) per day of ten hours. Those industries paying the lowest average wages—less than 6 francs (\$1.16) per day of ten hours—are the boiler works and the tinware and wire industries. For female employees, the highest average wages are paid in the jewelers' and goldsmiths' trades, the average for ten hours being higher than 4 francs (77.2 cents). It falls to below 3 francs in the manufacture of gold chains, common tinware, musical instruments, buttons, and in rolling mills.

The following shows the descending scale of wages paid per day of ten hours in the metal group:

Male employees—(1) Jewelry, (2) mechanical iron beds, (3) goldsmiths, (4) mechanical instruments, (5) lighting apparatus, (6) type foundry, (7) manufacture of faucets, (8) gas apparatus, (9) electrical machinery, (10) gold foundries, (11) manufacture of locks and safes, (12) gold beating, (13) gold, silver, and nickel plating, (14) manufacture of copper boilers, (15) art work in bronze, (16) manufacture of zinc counters, (17) engraving, (18) constructions in iron, (19) gold chains and imitation jewelry, (20) manufacture of buttons, (21) rolling mills and machine works, (22) copper and brass rolling, (23) iron foundries, (24) iron works, (25) boiler making, (26) punching works, (27) manufacture of household tinware, (28) manufacture of iron furniture, (29) wire works.

Female employees—(1) Jewelry, (2) goldsmiths, (3) gold foundries, (4) type foundries, (5) gold, silver, and nickel plating, (6) mechanical instruments, (7) gold beating, (8) machine construction, (9) manufacture of gold chains, (10) manufacture of household tinware, (11) rolling mills, (12) musical instruments, (13) manufacture of buttons.

*Wages by occupations in the metal group.*

Occupations.	Time or piecework.	Average wages per day of 10 hours.	
IRON INDUSTRIES.			
Males.			
Blacksmithing, rolling mills, and bolt, axle, and spring making :		Francs.	
Foremen.....	Time.....	9. 50 to 20. 00	\$1. 83 to \$3. 86
Rollers.....	Piece.....	7. 00 to 13. 00	1. 35 to 2. 51
Do. ....	Time.....	6. 50 to 12. 30	1. 25 to 2. 38
Cylinder turners.....	do.....	16. 00	3. 09
Furnace hands.....	Time and piece...	4. 00 to 16. 50	. 77 to 3. 18½
Furnace helpers.....	Time and piece...	5. 00 to 14. 00	. 96½ to 2. 70
Reducing rollers—			
Before.....	Piece.....	8. 00 to 9. 00	1. 54 to 1. 74
Behind.....	do.....	7. 00 to 8. 00	1. 35 to 1. 54
Catchers.....	do.....	7. 00 to 8. 00	1. 35 to 1. 54
Firemen.....	do.....	5. 00 to 6. 00	. 96½ to 1. 16
Helpers.....	do.....	4. 00 to 5. 00	. 77 to . 96½
Fagot hands.....	do.....	5. 00 to 6. 25	. 96½ to 1. 20
Belt makers and forge hands.....	do.....	4. 00 to 5. 50	. 77 to 1. 06
Feeders.....	Time.....	5. 50 to 6. 25	1. 06 to 1. 20
Sawyers.....	do.....	6. 00 to 7. 75	1. 16 to 1. 50
Fitters.....	Time and piece...	5. 00 to 12. 00	. 96½ to 2. 32
Blacksmiths.....	Time.....	5. 50 to 6. 25	. 96½ to 1. 20
Do.....	Piece.....	4. 50 to 22. 00	. 87 to 4. 24
Strikers.....	Time.....	3. 00 to 6. 50	. 58 to 1. 25
Do.....	Piece.....	3. 00 to 6. 75	. 58 to 1. 30
Clippers and thread cutters.....	do.....	3. 50 to 5. 00	. 67½ to . 96½
Punchers.....	do.....	1. 50 to 2. 50	. 29 to . 48
Hammerers.....	Time.....	18. 20	3. 58
Temperers.....	Piece.....	7. 50	1. 45
Molders.....	do.....	7. 00 to 11. 00	1. 35 to 2. 12
Spring makers.....	Time.....	6. 50	1. 25
Verifiers.....	do.....	9. 15	1. 77
Rounders.....	do.....	5. 00	. 96½
Polishers.....	Piece.....	8. 25	1. 59
Filers and mounters.....	do.....	6. 00 to 8. 00	1. 16 to 1. 54
Machinists.....	Time and piece...	7. 50 to 22. 00	1. 45 to 4. 24
Boys.....	Time.....	1. 10 to 3. 75	. 21 to . 72
Manufacture of edge tools, cutlery, and saws :			
Foremen.....	do.....	9. 50 to 29. 00	1. 83 to 5. 60
Edge-tool makers.....	Piece.....	6. 00 to 20. 00	1. 16 to 3. 86
Fitters and turners.....	Time.....	6. 00 to 7. 50	1. 16 to 1. 45
Forgemen.....	do.....	4. 50 to 5. 50	. 87 to 1. 06
Planishers.....	do.....	6. 85	1. 32
Machinists.....	do.....	7. 05	1. 36
Rollers.....	do.....	6. 45	1. 24
Polishers.....	do.....	5. 75	1. 11
Molders.....	do.....	7. 00	1. 35
Tooth sharpeners.....	do.....	6. 25	1. 20
Matchers.....	do.....	5. 60	1. 08
Apprentices.....	do.....	1. 00 to 3. 00	. 19½ to . 58
Iron for buildings, and constructions in iron :			
Foremen.....	do.....	9. 00 to 14. 00	1. 84 to 2. 70
Turners.....	do.....	7. 00	1. 35
Planers.....	do.....	5. 50 to 7. 00	1. 06 to 1. 35
Erectors.....	do.....	7. 75	1. 50
Fitters.....	Time and piece...	3. 00 to 10. 00	. 58 to 1. 93
Punchers.....	do.....	5. 50 to 6. 50	1. 06 to 1. 25
Blacksmiths.....	do.....	5. 00 to 9. 50	. 96½ to 1. 83
Scaffold raisers.....	Time.....	7. 00	1. 35

*Wages by occupations in the metal group—Continued.*

Occupations.	Time or piecework.	Average wages per day of 10 hours.	
IRON INDUSTRIES—continued.			
<i>Males—Continued.</i>			
Iron for buildings, and constructions in iron—Continued.		<i>Francs.</i>	
Journeymen.....	Time.....	7.50	\$1.45
Strikers.....	do.....	4.50 to 5.50	\$0.87 to 1.06
Tool makers.....	do.....	7.50	1.45
Fasteners or lockers.....	do.....	10.75	2.07
Stampers.....	do.....	3.25 to 5.00	.62½ to .96½
Locksmiths and railing makers.....	do.....	4.90 to 7.50	.94 to 1.45
Molders.....	do.....	5.20	1.00
Fitters of Venetian blinds.....	Time and piece...	8.65	1.67
Firemen.....	Time.....	6.00	1.25
Sheet iron workers, manufacturers of safes, heating apparatus, and wire cloth:			
Foremen.....	do.....	7.50 to 15.00	1.45 to 2.90
Galvanizers.....	do.....	4.75	.92
Tinsmiths.....	Piece.....	5.00 to 11.50	.96½ to 2.22
Machine hands.....	Time.....	5.75	1.11
Do.....	Piece.....	7.45	1.44
Painters.....	Time.....	7.80	1.55
Plate makers.....	do.....	3.75 to 7.50	.72½ to 1.45
Do.....	Piece.....	3.75 to 11.50	.72½ to 2.22
Stove makers.....	Time.....	4.00 to 7.75	.77 to 1.50
Machine fitters.....	do.....	7.90	1.52
Wire weavers and sieve makers.....	Piece.....	4.50 to 6.00	.87 to 1.16
Wire works and drawing of iron:			
Foremen.....	Time.....	6.00 to 16.00	1.16 to 3.09
Fitters.....	do.....	5.00 to 8.75	.96½ to 1.69
Drawers.....	do.....	4.00 to 7.75	.77 to 1.50
Do.....	Piece.....	5.00 to 7.50	.96½ to 1.45
Smiths.....	Time.....	5.50 to 8.75	1.06 to 1.69
Strikers.....	do.....	5.00	.96½
Wire drawers.....	do.....	6.60	1.27
Wire dressers.....	do.....	4.55	.89
Cleaners.....	do.....	6.50	1.25
Annealers.....	do.....	5.50	1.06
Dippers.....	do.....	4.25	.82
Iron foundries:			
Foremen.....	do.....	7.25 to 14.00	1.40 to 2.70
Molders.....	do.....	3.00 to 8.75	.58 to 1.69
Do.....	Piece.....	8.00 to 11.00	1.54 to 2.12
Mold makers.....	Time.....	5.00 to 7.75	.96½ to 1.50
Bearders and trimmers.....	do.....	4.00 to 7.15	.77 to 1.38
Makers of sand forms.....	do.....	4.50 to 5.25	.87 to 1.01
Smiths.....	do.....	6.00 to 10.00	1.16 to 1.93
Fitters.....	do.....	5.00 to 7.75	.96½ to 1.50
Machinists.....	do.....	9.15	1.77
Melters.....	do.....	5.85	1.13
Counter sinkers.....	do.....	6.70	1.29
Apprentices.....	do.....	0.50 to 3.50	.10 to .67½
Construction of all kinds of machinery:			
Foremen.....	do.....	8.00 to 24.00	1.54 to 4.64
Turners.....	do.....	4.25 to 9.50	.82 to 1.83
Do.....	Piece.....	5.00 to 12.00	.96½ to 2.32
Riveters.....	Time.....	7.40	1.43
Smiths.....	do.....	6.00 to 13.00	1.16 to 2.51
Do.....	Piece.....	6.50 to 13.00	1.25 to 2.51
Machinists.....	do.....	3.00 to 12.00	.58 to 2.32
Do.....	Time.....	2.50 to 10.00	.48 to 1.93



*Wages by occupations in the metal group—Continued.*

Occupations.	Time or piecework.	Average wages per day of 10 hours.	
IRON INDUSTRIES—continued.			
<i>Males—Continued.</i>			
Construction of all kinds of machinery—Continued.		<i>Francs.</i>	
Modelers.....	Time.....	5.00 to 9.00	\$0.96½ to \$1.74
Molders.....	do.....	7.10	1.37
Setters up.....	Time and piece...	5.50 to 10.00	1.06 to 1.93
Planishers and counter sinkers.....	do.....	7.50 to 12.00	1.45 to 2.32
Fitters.....	do.....	1.50 to 12.00	.29 to 2.32
Machinist electricians.....	Time.....	6.00 to 7.50	1.16 to 1.45
VARIOUS METAL INDUSTRIES.			
<i>Males.</i>			
Copper, brass, tin, etc., workers :			
Foremen.....	Time.....	6.50 to 20.00	1.25 to 3.86
Coppersmiths.....	do.....	6.70	1.29
Chasers.....	Piece.....	5.00 to 13.50	.96½ to 2.61
Picklers.....	Time.....	3.50 to 6.75	.67½ to 1.30
Do.....	Piece.....	4.50 to 5.50	.87 to 1.06
Beaters.....	Time.....	6.30	1.21
Bronzers.....	do.....	5.25 to 9.00	1.01 to 1.74
Enamelers.....	do.....	6.70	1.29
Gilders.....	do.....	4.50 to 8.75	.87 to 1.69
Engravers.....	do.....	8.60	1.66
Varnishers.....	do.....	4.85	.94
Employees' musical cords.....	do.....	4.50	.87
Button makers.....	do.....	6.10	1.18
Engravers—			
Steel.....	do.....	6.25	1.20
Copper.....	do.....	6.15	1.19
Tinsmiths.....	do.....	6.00 to 9.00	1.16 to 1.74
Do.....	Piece.....	5.00 to 20.00	.96½ to 3.86
Tool makers.....	Time.....	7.00	1.35
Do.....	Piece.....	14.00	2.61
Faucet turners.....	Time.....	7.00 to 7.50	1.35 to 1.45
Do.....	Piece.....	8.00 to 10.00	1.54 to 1.93
Hook makers.....	do.....	6.00 to 9.00	1.16 to 1.74
Precious metal workers :			
Foremen.....	Time.....	7.50 to 20.00	1.45 to 3.86
Gold beaters.....	Piece.....	4.00 to 10.00	.77 to 1.93
Platers.....	Time.....	3.50 to 8.00	.67½ to 1.54
Polishers.....	Time and piece...	5.00 to 12.00	.96½ to 2.32
Cut'ery makers.....	do.....	7.50 to 14.00	1.45 to 2.71
Stampers.....	Time.....	5.00 to 9.00	.96½ to 1.74
Engravers.....	do.....	5.90	1.14
Do.....	Piece.....	9.00 to 12.00	1.74 to 2.32
Goldsmiths.....	Time and piece...	7.00 to 11.00	1.35 to 2.12
Chasers.....	Time.....	5.50 to 9.00	1.06 to 1.74
Hatch chasers.....	do.....	5.15	.99
Colorists.....	do.....	6.10	1.18
Cleaners.....	do.....	5.00	.96½
Sculptors.....	do.....	10.50	2.03
Incrusters.....	do.....	5.75	1.11
Repairers.....	do.....	6.10	1.18
Jewelers.....	do.....	6.00 to 13.00	1.18 to 2.52
Do.....	Piece.....	5.00 to 12.00	.96½ to 2.32
Sheath makers.....	do.....	10.00	1.93
Lapidaries.....	do.....	10.00	1.93
Enamelers.....	do.....	10.00	1.93

*Wages by occupations in the metal group—Continued.*

Occupations.	Time or piecework.	Average wages per day of 10 hours.	
VARIOUS METAL INDUSTRIES—continued.			
<i>Females.</i>		<i>France.</i>	
Screw cutters.....	Piece.....	2.50	\$0.48
Fitters.....	Time and piece...	3.00 to 3.50	\$0.58 to .67½
Turners.....	Time.....	3.05	.59
Musical cord hands.....	do.....	2.40	.46
Button makers.....	Time and piece...	2.80	.54
Solderers.....	do.....	2.50 to 6.50	.48 to 1.25
Decorators.....	Piece.....	2.25 to 4.25	.43½ to .82
Burnishers.....	Time and piece...	1.50 to 5.50	.29 to 1.06
Gold-leaf pressers.....	do.....	3.00 to 4.50	.58 to .87
Polishers.....	Time.....	2.50 to 7.00	.48 to 1.35
Do.....	Piece.....	3.00 to 6.00	.58 to 1.16
Forewomen.....	Time.....	4.35 to 8.00	.85 to 1.54

Ordinarily, in these industries, as in all others, the occupations requiring the greatest skill and intelligence are the ones in which wages are highest. Production is an important factor, however, in certain cases, and it happens sometimes that workers turning out certain products in large quantities by mechanical means receive as much or even more than mechanics whose occupations require intelligence, skill, and a knowledge of design, such as fitters, for example, who, by the nature of their employment, can not work by the piece.

*Time and piecework.*—Contrary to what exists in most of the other groups of industries, a comparison of wages paid by time and piece in this group is difficult to establish. This is due to the fact that the character of the work changes with such frequency that a uniform rate, based upon long-continued production of one article, is almost impossible to arrive at. From this difficulty arises the other one of establishing a general level of wages paid by time and piece, and moreover, long usage has fixed the custom of paying a minimum wage by the hour, which serves as a basis for the actual wages earned, which are nearly always superior to this basis, and are dependent upon the production of the worker. This system has this advantage for the employee—it eliminates all uncertainty as to his minimum wage, of which he can always be certain. It results that the employee can not strictly be said to work by either time or piece. More properly speaking, he is paid a premium upon his production. Of course, the employer always has the right to discharge those whose work is not profitable under these conditions. This premium varies generally from 10 to 40 per cent of the minimum rate per hour, the average being about 25 per cent for workers who turn out products by the aid of various machines, and somewhat lower for the fitters and setters up.

In the precious-metal-working trades, the foregoing conditions do not exist. Wages are paid by time or piece. Gold beaters and precious stone setters are invariably paid by the piece. As will be observed in the nickel

and silver plating industries, polishers and varnishers earn higher wages when paid by the piece than when paid by time.

#### VIII.—THE STONE INDUSTRIES.

This group naturally subdivides into stonecutting and polishing, building and construction, and stone burning. The stonecutting and polishing industries include precious-stonecutting. The motive power employed in the large establishments for cutting precious stones is about 20 horsepower per one hundred hands employed. Frequently, however, this industry is practiced in small shops. The lapidary trade is one which requires great skill, and a long apprenticeship is necessary to develop a first-class worker. It is worthy of remark that fully one-third of the working force in this trade is composed of women, they following the same occupations and earning the same wages as men, their skill being said to be equal to that of the former. The average wages for both sexes are somewhat above 9 francs (\$1.74) per day of ten hours, this condition being one heretofore unobserved in any industry. Wages are paid entirely by the piece. The variation in the working force at different periods of the year is as much as 25 per cent. The employees are employed about three hundred working days per year, the duration of a day's labor being generally ten hours.

Marble cutting with machinery requires a motor power of 60 horsepower per one hundred hands. Many employees in this industry are necessarily more or less skilled, and some, such as polishers and sculptors, are highly skilled. The variation in the working force throughout the year is from 30 to 40 per cent; ten and one-fourth hours constitute the duration of the average working day. Wages are generally paid by the hour, the ordinary marble workers earning 7.50 francs (\$1.45) per day of ten hours, and the sculptors from 8 to 9 francs (\$1.54 to \$1.74) when paid by time, and from 10 to 12 francs (\$1.93 to \$2.32) when paid by the piece.

The employees of the building and construction industries are, for the most part, engaged in pipelaying, earthworks of various kinds, house building, railroad construction, laying of sewers and gas pipes, house painting, plumbing, masonry work, bricklaying, etc. These industries give employment to skilled and unskilled workers in about equal proportions, an exception being made in the case of construction of earthworks, where the majority of employees are merely laborers.

The motor power employed in these industries is generally in the form of stationary engines, capable of being transported from place to place. Women and children are not employed, and work rarely ceases on Sunday, except in the masonry trade. The number of working days are, therefore, about equal to the number of days in the year, but variation in the number of working days per employee from those of production is very great. The average duration of a working day in the different industries is from nine to ten and one-half hours, depending upon the season. During the summer, painters work ten hours; masons, eleven hours; pavers, twelve and thirteen hours; and in the winter, the hours are sometimes reduced to seven for all

these trades. The busy season for the bricklayers is before the commencement of the cold season, during which the exigencies of their calling sometimes require work to be continued all night long. The variation of the working force of these trades is consequently influenced by the seasons. Beyond this variation for the trades in general, it should be noted that, in the building industries, the working force of the various establishments or contractors is extremely unstable, the men changing from one employer to another with great frequency. This characteristic of the working force of these industries is more marked than in any other industry.

*Wages by occupations.*—With the exception of stonecutters, stone sawyers, etc., who are frequently paid by the piece, and who, when thus paid, earn higher wages than when paid by time, the employees of these industries are nearly all paid by time.

(A) STONE CUTTING AND POLISHING AND BUILDING AND CONSTRUCTION.

*Wages by occupations in stonecutting and polishing, and building and construction.*

Occupations.	Time or piecework.	Average wages per day of 10 hours.	
		<i>Francs.</i>	
<b>Cutting and polishing:</b>			
Lapidaries.....	Piece.....	5.00 to 15.00	\$0.96½ to \$2.89
Marble workers.....	Time.....	5.25 to 8.40	1.01 to 1.62
Sculptors.....	Time and piece...	7.00 to 14.00	1.35 to 2.71
Polishers.....	Time.....	5.75 to 6.80	1.11 to 1.31
<b>Construction of canals, embankments, railroads, public works, etc.; laying of water and gas pipes, plumbing, house painting, etc.:</b>			
Foremen.....	.....do.....	6.00 to 20.00	1.16 to 3.86
Plumbers.....	.....do.....	5.00 to 8.50	.96½ to 1.64
Adjusters.....	.....do.....	5.50	1.06
Diggers.....	.....do.....	5.00	.96½
Tilers.....	.....do.....	8.60	1.66
Zinc hands.....	.....do.....	8.00	1.54
Pavers.....	.....do.....	7.00	1.35
Carters.....	.....do.....	5.00 to 6.00	.96½ to 1.16
Masons.....	.....do.....	7.00 to 8.50	1.35 to 1.64
Surveyors.....	.....do.....	11.60	2.24
Wall builders.....	.....do.....	5.50 to 6.75	1.06 to 1.30
Stonecutters.....	.....do.....	6.50 to 8.00	1.25 to 1.54
Do.....	Piece.....	7.00 to 11.00	1.35 to 2.12
Stone sawyers.....	.....do.....	8.00 to 10.00	1.54 to 1.93
Chimney builders.....	Time.....	6.50 to 9.50	1.25 to 1.83
House painters.....	.....do.....	6.25 to 8.00	1.20 to 1.54
Paint grinders.....	.....do.....	3.50 to 5.25	.67½ to 1.01
Paper layers.....	Time and piece...	5.60 to 9.50	1.08 to 1.83
Decorators.....	Time.....	8.00	1.54
Inside painters.....	Time and piece...	12.00	2.32

(B) STONE-BURNING INDUSTRIES.

These industries include brick and tile making, pottery and porcelain works, glass making, and kindred enterprises. Brick and tile making require as much as 100 horsepower per one hundred hands, but the other industries do not average more than 15 horsepower for the same number of hands.

*Employees.*—The employees are, for the greater part, laborers, though hand molding gives employment to some skilled workmen, and decoration

requires, at times, highly skilled artisans, though the trade is easily learned and does not require a long apprenticeship. The proportion of female employees in the brick and tile making industries is only 2 per cent. It is 13 per cent in the manufacture of fine pottery and crockery, and 40 per cent in the manufacture of mirrors and common wares of this character.

*Working time.*—The average number of working days per year in this subgroup is three hundred, but the employees individually make from 9 to 10 per cent less than this. The average duration of the working day is from ten to ten and one-half hours. In brick and tile making, the day varies from eight to twelve hours; in the pottery works, from ten to eleven hours, and exceptionally twelve hours. It is ten, eleven, and twelve hours in the glass-making establishments.

The variation in the working force throughout the year does not present any marked fluctuations.

*Wages by industries.*—The manufacture of artistic pottery and crockery naturally heads the list with the highest average wages in these industries. Glass making occupies the last place on the list, notwithstanding the fact that many highly paid workmen are employed in this industry, the large number of children employed reducing the general average of wages. The following shows the descending scale of the average wages paid per day of ten hours:

Male employees—(1) Artistic pottery and crockery, (2) manufacture of mirrors, (3) manufacture of incandescent lamps, (4) painting on glass, (5) manufacture of optical glasses, (6) common crockery, (7) brick and tile making, (8) glass making.

Female employees—(1) Artistic pottery and crockery, (2) manufacture of mirrors, (3) manufacture of common crockery, (4) manufacture of optical glasses, (5) manufacture of incandescent lamps, (6) manufacture of false pearls, (7) glass making.

*Wages by occupations.*—There does not seem to be much difference in wages, whether earned by time or piece. Decorators are always paid by the piece, but the majority of male employees of the porcelain and crockery industries are paid by the hour, and in glass making by the month. Female employees are nearly always paid by the piece in these industries.

*Wages by occupations in stone-burning industries.*

Occupations.	Time or piecework.	Average wages per day of 10 hours.	
<i>Males.</i>			
Brick and tile making:		<i>Francs.</i>	
Foremen.....	Time.....	6.00 to 10.00	\$1.16 to \$1.93
Brickmakers.....	.....do.....	5.85	1.13
General workmen.....	.....do.....	5.75	1.11
Tile makers.....	Time and piece...	3.90	.75
Manufacture of porcelain, pottery and crockery, both common and artistic:			
Foremen.....	Time.....	6.00 to 12.00	1.16 to 2.32
Molders.....	.....do.....	6.00 to 10.00	1.16 to 1.93
Do.....	Piece.....	5.50 to 11.50	1.06 to 2.29

*Wages by occupations in stone-burning industries—Continued.*

Occupations.	Time or piecework.	Average wages per day of 10 hours.	
<i>Males—Continued.</i>			
Manufacture of porcelain, pottery and crockery, both common and artistic—Continued.		<i>Francs.</i>	
Muffle mill hands.....	Time.....	6.50	\$1.25
Do.....	Piece.....	8.00	1.54
Bakers.....	Time.....	5.90	1.14
Painter decorators.....	Piece.....	5.00 to 20.00	\$0.96½ to 3.86
Mold makers.....	do.....	6.50 to 9.00	1.25 to 1.74
Clay beaters.....	do.....	7.50	1.45
Turners.....	do.....	8.00	1.54
Sculptors.....	Time and piece...	10.00 to 12.50	1.93 to 2.42
Enamellers.....	Piece.....	5.00 to 8.00	.96½ to 1.54
Setters-up.....	Time.....	7.50 to 9.50	1.45 to 1.83
Glass making, manufacture of mirrors, and optical glasses:			
Foremen.....	do.....	4.00 to 20.00	.77 to 3.86
Glass melters and glass makers.....	do.....	2.50 to 14.75	.48 to 2.85
Blowers—			
First.....	do.....	6.00 to 7.50	1.16 to 1.45
Second.....	do.....	4.00 to 5.25	.77 to 1.01
Potters.....	do.....	3.50 to 10.00	.67½ to 1.93
General workmen.....	do.....	5.50 to 10.00	1.06 to 1.93
Cutters.....	Piece.....	4.50 to 15.00	.87 to 2.90
Decorators and engravers.....	do.....	4.00 to 10.00	.77 to 1.93
Tube drawers.....	Time.....	5.00 to 7.50	.96½ to 1.45
Stampers.....	Piece.....	7.20	1.39
Scratchers.....	Time.....	4.15	.80
<i>Females.</i>			
Porcelain, pottery, and crockery industries:			
Enamellers.....	Time and piece...	3.65	.70
Flowerists and burnishers.....	Piece.....	2.80 to 8.00	.54 to 1.54
Painters.....	do.....	3.00 to 6.00	.58 to 1.16
Decorators.....	Time.....	3.50 to 4.50	.67½ to .87
Workers.....	do.....	2.00 to 3.25	.38½ to .63
Glass making, manufacture of mirrors, optical glasses, etc.:			
Cutters.....	Piece.....	1.50 to 5.00	.29 to .96½
Wipers.....	do.....	1.50 to 3.00	.29 to .58
Varnishers.....	do.....	3.15	.61
Various.....	do.....	1.00 to 6.00	.19½ to 1.16

## IX. —TRUCKING AND DELIVERY BUSINESS.

*Wages by occupations in the trucking and delivery business.*

Occupations.	Time or piecework.	Average wages per day of 10 hours.	
		<i>Francs.</i>	
Foremen.....	Time.....	4.75 to 9.00	\$0.92 to \$1.74
Workmen.....	do.....	7.50	1.45
Do.....	Piece.....	5.00 to 6.00	.96½ to 1.16
Truckmen:			
Stone.....	do.....	10.00 to 11.00	1.93 to 2.12
Sugar.....	do.....	7.00 to 8.00	1.35 to 1.54
Coal.....	do.....	5.00	.96½
Hostlers.....	do.....	5.00 to 8.00	.96½ to 1.54
Packers.....	do.....	4.00 to 5.00	.77 to .96½
Horseshoers.....	do.....	6.50 to 7.00	1.25 to 1.35

## X.—TOBACCO MANUFACTORIES.

*Wages paid in tobacco manufactories (State works).*

Occupations.	Time or piecework.	Average wages per day of 10 hours.		
<i>Males.</i>		<i>Francs.</i>		
Foremen .....	Time.....	4.25 to 13.75	\$0.82	to \$1.23
First-class workmen.....	Piece.....	5.75		1.11
Snuff makers.....	do.....	5.65		1.09
Tobacco makers.....	do.....	5.70		1.10
Cigar and cigarette makers.....	do.....	6.00		1.16
<i>Females</i>				
Forewomen.....	Time.....	3.50 to 4.75	.67½	to .92
Snuff makers.....	Piece.....	3.70		.71
Tobacco makers.....	do.....	3.65		.70
Cigar and cigarette makers.....	Time and piece...	3.55		.69

## DURATION OF THE WORKING DAY.

In order to throw further light upon the general duration of the working day in the various industries here dealt with, general tables have been prepared. These tables present the normal duration of the working day by establishments under subheadings of the various groups of industries.

In the case of certain establishments, there are two durations for a working day, according to the seasons of the year, viz, the working force is divided into two groups, one of which works more or fewer hours than the other. In these cases, the establishments have been given a value of one-half for each of the two durations in the columns of the table indicating the duration of the day. Table I classifies the establishments according to the length of the day, all recesses being deducted, and Table II classifies them under the heads of the general groups of industries according to the length of the day, all recesses being included.

TABLE I.—Normal duration of the working day (recesses deducted) by establishments, grouped according to industries.

Industries.	Total number of establishments.	Total number of hands employed.	Number of establishments and employees for whom the duration of the working day (recesses deducted) is from—											
			8 hours and less.		8 to 9 hours.		9 to 10 hours.		10 to 11 hours.		11 to 12 hours.			
			Estab-lish-ments.	Em-ployees.	Estab-lish-ments.	Em-ployees.	Estab-lish-ments.	Em-ployees.	Estab-lish-ments.	Em-ployees.	Estab-lish-ments.	Em-ployees.		
<i>Alimentary products.</i>														
Mechanical preparation of cereals.....	6	150					1	60					10	
Refineries and distilleries.....	6	3,220							4	80			1	
Breweries and manufacture of liquors.....	8	280					1	40	5	3,000			220	
Manufacture of mineral waters (no normal dura- tion).....	2	150							4	110	3		130	
Manufacture of various alimentary products.....	14	2,000			1½	60	7½	490	4	1,430	1		20	
<i>Chemical industries.</i>														
Manufacture of gas and large chemical works.....	8	1,030					½	30	6	900	1½		100	
Diverse industries.....	20	1,500					9	650	10	830	1		40	
<i>Paper and rubber industries.</i>														
Manufacture of rubber.....	8	1,330					2	452	6	880				
Manufacture of cardboard and special papers.....	5	350			1	20			4	330				
Manufacture of paper, etc.....	3	430			½	70	1½	280	1	80				
Manufacture of wall papers.....	5	1,090					3½	610	1½	480				
<i>Book industries.</i>														
Printing.....	18	4,000			1	180	16½	3,500			½		300	
Sewing and binding.....	9	900					6	790	3	110				
<i>Leather and fur industries.</i>														
Manufacture of furs and leather.....	21	2,500					11	1,360	9	960	1		200	
Manufacture of boots and shoes.....	7	880					1	110	3	280	3		490	
Manufacture of gloves.....	5	300			1	10	4	290						
<i>Textile industries.</i>														
Rope and string manufacture and weaving.....	6	1,030					2½	460	3½	570				



TABLE I.—*Normal duration of the working day (recesses deducted) by establishments, grouped according to industries—Continued.*

Industries.	Total number of establishments.	Total number of hands employed.	Number of establishments and employees for whom the duration of the working day (recesses deducted) is from—									
			8 hours and less.		8 to 9 hours.		9 to 10 hours.		10 to 11 hours.		11 to 12 hours.	
			Establishments.	Em- ployees.	Establish- ments.	Em- ployees.	Establish- ments.	Em- ployees.	Establish- ments.	Em- ployees.	Establish- ments.	Em- ployees.
<i>Textile industries—Continued.</i>												
Dyeing.....	9	1,000										
Manufacture of knitted goods, embroidery, etc.....	6	820	1½	140			2	80		2½		600
<i>Industries working up tissues.</i>												
Manufacture of awnings, upholstery, and bed covers.....	7	200			1	10	4	120	2	70		
Manufacture of military equipments, etc.....	6	2,800					4	2,500	2	300		
Manufacture of corsets.....	2	200					2	200				
Manufacture of hats.....	6	550	1	80			2	240	3	230		
Manufacture of artificial flowers and feathers.....	3	100					3	100				
Cleaning and dyeing establishments.....	1	400					1	400				
Establishments without normal duration.....	3	100										
<i>Wood industries.</i>												
Manufacture of wagons, carpentering, etc.....	12	880					12	880				
Saw mills, etc.....	10	470					4	220	5	220	1	30
Cabinetmaking, etc.....	35	2,800					25½	2,480	8	240	1½	80
Manufacture of toys.....	4	50			1	10	1	10	1½	20	½	10
<i>Metal industries.</i>												
Blacksmithing, etc.....	9	1,160					3	320	5	690	1	150
Manufacture of iron for, and construction of iron boilers.....	11	1,310					10	1,290	1	20		
Manufacture of sheet iron.....	4	380					2	140	2	240		
Manufacture of iron railings.....	3	85							2	60	1	80
Manufacture of wire and iron furniture.....	7	470					3	265	4	210		
Manufacture of iron household utensils.....	4	720					2	600	2	20		

Iron foundries.....	4	460					3	170	1	290		
Manufacture of machinery.....	41	6,970					83	2,530	13	2,340	5	2,100
Rolling and founding of copper and brass, manu- facture of gas apparatus and mechanical instru- ments, and manufactures in copper.....	22	1,770					13½	980	7½	780	1	
Manufacture of musical instruments, buttons, etc....	8	1,060					8	1,060			1	
Manufacture of tinware, etc.....	14	1,490					8½	850	3½	300		760
Gold foundries and beating.....	4	440					1	120	1	130		
Manufacture of jewelry, etc., and plating.....	16	1,110					14	1,080	1	10	1	20
<i>Stone industries.</i>												
Cutting precious stones, and marble works.....	3	130					3	130				
Pipelaying and plumbing.....	8	1,140					5	630	2	480	1	30
Public works (masonry).....	5	680					4	290	1	330		
Chimney building.....	2	40							2	40		
Painting and decoration.....	6	850					5	840				
Manufacture of brick and tiles.....	2	290					1	190	1	100		
Manufacture of crockery.....	5	1,130					4½	530	½	600		
Manufacture of glass.....	5	1,470					3	1,220	1	160	1	90
Manufacture of mirrors, etc.....	6	180					3	119	2	60		
<i>Transportation.</i>												
Trucking and drayage.....	6	900					2	510			1	10
Establishments without normal duration.....	1	250										
Total for private industries.....	436	54,400	5½	560	12	620	249	30,300	140½	18,680	29	4,340
Government industries.....	23	8,600	6	540	1	40	15	7,450			1	570
Total for all industries.....	459	63,000	11½	1,100	13	660	264	37,750	140½	18,680	30	4,910
Establishments without normal duration.....	15	1,500										

TABLE II.—*Normal duration of the working day (recesses included) by establishments classified under the heads of general groups of industries.*

Industries.	Number of establishments and duration of working day (recesses included).						Number of establishments and duration of principal recess.	
	9 hours and less.	9 to 10 hours.	10 to 11 hours.	11 to 12 hours.	12 to 13 hours.	12 hours and more.	1 hour and less.	1 to 2 hours.
Allimentary products.....		1	8	17	6	2	31	3
Chemical products.....			7	17	4		23	5
Manufacture of paper, rubbers, etc.....		1	5½	14½			17	4
Manufacture of books.....		1	18½	7	½		24	3
Fur and leather industries.....			12	19	2		28	5
Textile industries.....	½	1	2½	8			15	6
Industries working up tissues.....	1	1	13	10			20	8
Rough wood industries.....			4	16	2		22	
Cabinet and toy making.....			26½	10	2½		36	3
Iron works, rolling mills, and wire works.....			15	12	6	1	33	1
Iron foundries and manufacture of machinery.....			27	17	5		42	7
Manufacturing in different metals, brass, copper, etc.....		1	28½	9½	5		42	2
Manufacturing in precious metals.....			16	3	1		18	2
Precious-stone cutting and marble works.....			3				3	
Pipelaying, earth works, and construction in stone.....		1	13	6	1		20	1
Stone-burning industries.....			9½	4½	4		16	2
Transportation.....	2	1	1	1	1		4	2
Total for private industries.....	3½	8	209	171½	40	3	*394	*54

\* Duration of recess unknown for three establishments.

## DISTRIBUTION OF WAGES.

With a view to ascertain what relation the daily wages of the majority of male employees bear to the general average of day wages of the same employees, Table III has been prepared, in which a scale of wages from 2.75 francs (53 cents) and less, to 12.25 francs (\$2.36) and more, together with the number of male employees classified by general groups of industries for each one of these rates, are given. In these calculations, employees paid by the piece are excluded, as, in many cases, the working time of these employees is unknown. The general average daily wage for all the industries, as presented in the résumé in Table V, is 6.15 francs (\$1.18 $\frac{1}{6}$ ). Excluding employees paid by the piece, this general average becomes 5.90 francs (\$1.13 $\frac{1}{3}$ ). Employing this average in connection with Table III, it is noted that 58 per cent of all employees are included between the rates 4.75 francs (92 cents) and 7.25 francs (\$1.40), and 77 per cent are included between the rates 4.25 francs (88 cents) and 7.75 francs (\$1.50), it thus being indicated that the rates of daily wages of the majority of male employees are closely distributed around the general average.

TABLE III.—Classification of male employees paid by time, according to different rates of day wages, by groups of industries.

Industries.	Number of employees receiving day wages of—																		
	\$0.53 and less.	\$0.53 to \$0.62	\$0.62 to \$0.72	\$0.72 to \$0.82	\$0.82 to \$0.92	\$0.92 to \$1.01	\$1.01 to \$1.11	\$1.11 to \$1.20	\$1.20 to \$1.30	\$1.30 to \$1.40	\$1.40 to \$1.50	\$1.50 to \$1.60	\$1.60 to \$1.70	\$1.70 to \$1.80	\$1.80 to \$1.90	\$1.90 to \$2.00	\$2.00 to \$2.17	\$2.17 to \$2.36	\$2.36 and more.
Alimentary products.....	1	14	264	213	464	162	29	83	95	39	24	63	3	1	1	1	1	1	1
Chemical products.....	4	3	104	49	169	179	83	95	39	47	11	17	4	1	1	1	1	1	1
Manufacture of paper, rubber, etc.....	50	18	49	100	99	143	88	145	62	29	30	11	6	11	6	6	6	6	6
Book industries.....	21	30	20	26	42	71	16	72	48	46	35	6	5	9	30	39	6	4	1
Fur and leather industries.....	35	24	14	48	101	199	155	182	94	50	24	15	2	12	1	10	1	1	1
Textile industries.....	2	4	130	279	106	124	99	55	54	47	15	6	2	2	1	1	1	1	1
Industries working up tissues.....	2	2	4	12	3	53	33	9	12	2	4	1	2	4	1	7	1	1	5
Rough-wood industries.....	2	7	2	4	28	105	26	104	81	268	95	99	21	17	4	4	1	1	1
Cabinet and toy making.....	3	2	11	20	13	18	15	40	29	74	31	50	28	9	7	23	1	1	1
Iron works, rolling mills, and wire works.....	2	1	10	159	99	165	235	129	120	156	166	38	13	16	2	6	1	1	1
Iron foundries, and manufacture of machinery.....	25	18	12	75	143	143	162	207	396	271	127	58	40	15	7	8	1	1	1
Manufacturing in different metals, brass, copper, etc.....	18	19	32	81	140	143	112	229	224	219	238	129	101	35	19	10	11	2	1
Manufacturing in precious metals.....	1	1	9	5	6	9	4	14	8	10	7	7	1	1	1	5	2	3	4
All stone industries.....	1	5	38	48	105	184	51	199	21	268	554	41	5	2	1	10	1	1	3
Transportation.....	12	3	4	2	4	33	14	54	25	23	23	11	23	7	3	5	1	1	3
Total.....	173	453	1,172	1,271	2,182	1,351	1,551	1,403	1,558	1,359	232	552	232	133	76	137	30	15	19

## WAGES IN THE BUILDING TRADES.

In order to throw all the light possible upon wages paid in these industries Table IV is presented, in which are given the wages per hour accorded by the board of *prud'hommes* of the department of the Seine, to employees of these industries in cases of dispute with their employers, together with the official tariffs of wages paid by the city of Paris, and by the Society of Architects.

TABLE IV.—*Wages per hour accorded first-class workers by the board of prud'hommes of the department of the Seine to employees of the building industries, in comparison with official tariffs of wages of the city of Paris and the Society of Architects.*

Occupations.	Wages per hour most frequently accorded by the board of prud'hommes.			Tariff of the city of Paris.*	Tariff of the Society of Architects.
	Lowest.	Highest.	Average.		
Iron carpenters.....	\$0.13½	\$0.14½	\$0.14	\$0.19½	\$0.14
Builders in iron.....	.13½	.14½	.14	.14½	.13½
Slaters.....	.15½	.16½	.15½	†1.54	†1.45
Chimney builders.....	.13½	.15½	.14½	.14½	.13½
Plumbers.....	.13½	.15½	.14	†1.45	†1.35
Joiners.....	.13½	.15½	.14½	.15½	.13½
Floor layers.....	.15½	.17½	.16½	.17½	.16½
Cabinetmakers.....	.13½	.15½	.14½		
Carpenters.....	.15½	.17½	.16½	.17½	.15½
Long sawyers.....	.13½	.15½	.14½		
Bricklayers.....			.16½	.16½	.14
Demolishers (tearers down).....	.11½	.13½	.12		
Masons.....	.13½	.15½	.14½	.16½	.14½
Mason coaters.....			.19½		
Rough plasterers.....	.19½	.25	.22	.24	.19
Dressers.....	.19½	.24	.21		
Stonecutters.....	.15½	.16½	.15½	.16½	.14½
Whitewashers.....			.13½		
Painters.....	.14½	.15½	.14½	.15½	.14½
Decorators, gilders, etc.....	.19½	.24	.21		
Pavers.....			.13½	.14½	.13½
Well diggers or borers.....			.14½	.14½	.14½
Diggers.....	.09½	.11½	.10½	.11½	.10½
Quarry men.....			.11½		
Cementers.....	.12½	.15½	.14½	.14½	.15½
Carters.....			.09½		

\*Nine hours in summer, eight hours in winter.

†Per day.

## RECAPITULATION.

In the two tables which follow are to be found the general results, of which the foregoing text and tables are explanatory. Table V gives the hours of work, the variation in the working force, the composition of this force, and the average wages by industry. Column 1 of this table indicates the character of the industry; column 2 gives the motor power employed per each hundred workers, and thus indicates the importance of machinery in production in comparison with manual labor; column 3 gives the average num-

ber of days the establishments run, or, in other words, the number of days of production computed in proportion to the number of hands employed for each establishment; column 4 gives the average number of working days for each worker; column 5 gives the average duration of a working day, computed in proportion to the hands employed by grouping the establishments; columns 6 and 7 give for each industry or group of industries (6) the average variation of the working force per establishment, *i. e.*, the difference, computed upon a basis of one hundred workers, between the maximum and minimum working force during the year, each establishment being counted as a unit, and (7) the variation of the working force by groups of industries upon a basis of one hundred workers. The figures of column 7 are necessarily less than those of column 6, for the reason that the total working force of a group of industries is not affected by the passage of employees from one establishment of this group to another, whereas such movements necessarily create variations more or less important on the establishments affected. Columns 8, 9, 10, and 11 give the proportion of foremen, male and female employees, children, and apprentices per hundred employees in the industries; column 14 gives the total of columns 10 and 11. In columns 15, 16, and 17 are to be found the average wages per unit of the total working force for ten hours' work for a working day, and for a year. Columns 12 and 13 show the average wages per working day for male and female employees, foremen, apprentices, and children being excluded from this computation. The averages presented in columns 15, 16, and 17, uniting all categories of workers in the computation, may appear to have only a very doubtful theoretical value, but the average wage per working day of ten hours serves as an "economic coefficient of the cost of labor," and is all that is necessary in order to estimate the part of labor in the cost of production, and to study the variation at different places and at different times. The average annual wages presented in column 17 apply, for the most part, to those who are employed all the year—a condition which, it may be stated, does not apply to all, or even the generality of hands employed.

The résumé presents the same results as the table, by groups of industries, the grouping being under the general heads adopted in the treatment of this division of the subject.

TABLE V.—Hours of work, variation in working force, composition of force, and average wages by industries.

Industries.	Motor power per 100 employees.	Average number of days of production in year.	Average number of days worked per employee.	Average number of hours in a working day.	Average variation in the working force of the different establishments calculated on a basis of 100 workers.	Variation in the whole working force of each industry per year calculated on a basis of 100 workers.	Proportion to each 100 employees of—					Average wages per working day.		Average wages per employee.		
							Foremen.	Males.	Females.	Child and apprentices.	Males.	Females.	Total number of females and children per 100 hands employed.	Work-day.	Day of 10 hours.	Year.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
<i>Alimentary products.</i>																
Manufacture of various grains and flours.	70	365	356	10½	11	.....	1	99	0	0	\$0.99	.....	0	\$1.00	\$0.96½	\$375.05
Flour mills.....	590	360	357	11	5	5	6	94	0	0	1.13	.....	0	1.21	1.11	453.55
Starch works.....	110	365	340	10	0	.....	4	74	22	0	.89	\$0.38½	22	.79	.79	270.20
Various farinaceous products.....	160	365	357	10½	83	.....	0	100	0	0	.93	.....	0	.91	.87	354.24
Sugar refineries and manufacture of molasses.....	120	380	291	11	10	10	3	79	16	2	1.06	.63	18	1.01	.92	295.29
Sugar-cutting establishments.....	10	307	300	12	8	.....	0	100	0	0	.87	.55	54	.70	.59	210.37
Distilleries and refineries of alcohol.....	100	397	300	11½	.....	.....	2	44	50	4	1.16	.....	0	1.16	1.05	347.40
Manufacture of liquors and spirits.....	40	306	305	11½	16	11	5	95	0	0	1.02	.....	0	1.12	.96½	341.69
Breweries.....	120	357	352	10½	41	27	2	98	0	0	1.01	.....	0	1.04	.96½	366.70
Manufacture of mineral waters.....	360	350	350	10½	75	53	2	98	0	0	.98	.....	0	.99	.96½	347.41
Bakeries.....	0	365	348	9½	27	.....	0	90	10	0	1.17	.48	10	1.10	1.16	382.14
Manufacture of pastry and confectionery.....	60	297	285	10	60	25	4	62	33	1	.95	.52	34	.79	.79	225.81
Manufacture of chocolate.....	60	300	292	10½	9	.....	1	41	57	1	1.02	.50	58	.75	.69	220.02
Manufacture of canned fruits and meats.....	5	304	356	10½	.....	.....	2	28	70	0	1.31	.44	70	.69	.65	212.30
Manufacture of various alimentary products.....	20	397	310	11	15	.....	6	41	53	0	1.19	.67	53	1.02	.93	316.52
Manufacture of salt provisions.....	0	360	360	10½	43	.....	1	99	0	0	1.29	.....	0	1.07	1.00	386.10

*Chemical industries.*

Petroleum refineries.....	365	300	11	67	2	98	0	0	1.06	.....	0	1.07	.97½	300.38
Manufacture of sulphuric acid and fertilizers.....	357	345	11	37	2	95	0	3	.91	.31	3	.91	.83	313.60
Manufacture of colors, white lead, etc.....	310	301	11	5	3	94	1	0	1.02	.58	1	1.01	.92	304.94
Manufacture of various pharmaceutical and photographic products.....	302	300	10	6	5	63	32	0	1.06	.51	32	.92	.92	275.39
Manufacture of fireworks.....	320	316	10	50	2	59	39	0	1.25	.48	39	.94	.94	299.15
Manufacture of printing inks and colors.....	314	311	10½	6	7	69	20	4	1.12	.63	24	.96½	.91	301.08
Manufacture of writing inks and black- ing.....	302	289	10½	10	3	38	54	5	.97	.56	59	.77	.75	241.95
Manufacture of vegetable oils.....	272	280	11	115	10	90	0	0	1.07	.....	0	1.10	1.00	308.80
Manufacture of glues.....	362	357	10	63	2	86	12	0	.81	.....	12	.81	.81	289.70
Fat-trying establishments.....	365	356	10	14	0	91	4	5	1.01	.56	9	.96½	.96½	333.54
Manufacture of soap, candles, and per- fumery.....	316	307	10½	12	2	48	42	8	.97	.46	50	.75	.69	231.16
<i>Manufacture of paper, rubber, etc.</i>														
Manufacture of rubber.....	292	294	10½	14	4	70	23	3	1.05	.55	26	.95	.90	277.92
Manufacture of cardboard and special papers.....	300	293	10½	22	2	68	26	4	1.07	.57	30	.90	.83	238.62
Manufacture of paper, envelopes, etc.....	300	281	10	18	2	22	66	10	1.16	.60	76	.67½	.67½	189.14
Manufacture of wall papers.....	300	303	10½	12	1	86	1	12	.88	.42	13	.79	.75	208.32
Manufacture of maps.....	299	295	11	10	1	37	46	16	.....	.....	62	.99	.84	274.06
<i>Book making.</i>														
Printing establishment.....	304	300	10	18	1	66	16	17	1.37	.68	33	1.02	1.01	306.87
Pamphlet and book making.....	315	312	10½	38	2	11	80	7	1.26	.56	87	.63	.60	194.93
Art binding.....	303	293	10½	10	0	86	14	0	1.79	1.06	14	1.68	1.65	492.15
Common binding.....	301	287	10	49	3	43	40	14	.93	.60	54	.70	.70	202.65
<i>Leather and fur industries.</i>														
Fur cutting and dressing.....	322	307	10½	12	2	34	59	5	1.35	.61	64	.87	.85	266.34
Leather dressing, tanning, currying, manufacture of patent leather, mo- rocco, and chamois leathers.....	304	287	10½	23	4	90	2	4	1.05	.61	6	1.05	.96½	301.08
Fur dyeing.....	305	304	10	36	2	56	38	4	1.11	.59	42	.91	.91	277.92
Manufacture of harness and saddles.....	330	303	11	37	3	82	8	7	1.21	.79	15	.98	.91	299.15



TABLE V.—Hours of work, variation in working force, composition of force, and average wages by industries—Continued.

Industries.	Motor power per 100 employees.	Average number of days of production in year.	Average number of days worked per employee.	Average number of hours in a working day.	Average variation in the working force per year of the different establishments calculated on a basis of 100 workers.	Variation in the whole working force of each industry per year calculated on a basis of 100 workers.	Proportion to each 100 employees of—				Average wages per working day.		Total number of females and children per 100 hands employed.	Average wages per employee.		
							Foremen.	Males.	Females.	Children and apprentices.	Males.	Females.		Working day.	Day of hours.	Year.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
<i>Leather and fur industries—Cont'd.</i>																
Manufacture of shoes and boots.....	15	304	288	11	26	14	4	42	36	18	\$1.09	\$0.65	54	\$0.81	\$0.73	\$233.53
Manufacture of pocketbooks.....	0	301	278	10	15	.....	4	80	16	0	1.25	.59	16	1.19	1.19	333.89
Manufacture of gloves.....	2	304	235	9½	15	12	10	32	57	1	1.27	.52	58	.83	.84	194.93
<i>Textiles.</i>																
Cotton-thread manufacture .....	80	292	286	10½	8	6	4	16	75	5	1.03	.55	80	.67	.61	191.07
Rope making.....	120	300	287	10½	21	.....	3	75	11	11	.95	.66	22	.89	.84	252.83
Felt making.....	110	300	278	11	0	.....	0	82	18	0	1.18	.50	18	1.07	.97½	293.22
Silk weaving.....	0	315	300	10	20	.....	0	63	37	0	1.20	.50	37	.79	.79	237.39
Dyeing in the yarn.....	60	294	276	10½	9	.....	3	89	4	4	1.04	.56	8	1.02	.96½	281.78
Dyeing and finishing of tissues.....	60	300	300	10½	18	14	11	81	11	5	.90	.43	16	1.05	.81	256.69
Manufacture of hosiery.....	20	298	.....	10½	13	13	1	15	75	9	1.20	.49	84	.59	.56	.....
Manufacture of embroidery.....	10	307	290	10½	14	14	1	11	81	7	1.02	.69	88	.67	.64	193.00
<i>Finishing of tissues and stuffs.</i>																
Manufacture of awnings.....	6	307	296	10	23	.....	0	100	0	0	1.13	.....	0	1.10	1.10	328.10
Manufacture of upholstery trimmings.....	0	304	307	10	36	23	4	44	44	2	1.80	.75	52	1.21	1.24	372.49
Manufacture of bed covers.....	50	305	300	9½	34	.....	3	10	80	7	1.22	.70	87	.75	.77	213.11

Manufacture of military furnishings.....	7	302	297	10½	27	25	1	43	52	4	1.05	56	56	1.84	.80	248.97
Manufacture of men's clothing.....	0	300	300	10	37	.....	3	97	0	0	1.83	.....	0	1.90	1.71	599.35
Manufacture of clothing.....	4	308	274	11	0	.....	11	20	69	11	1.16	.54	80	.56	.52	175.63
Manufacture of corsets.....	3	294	289	10	17	14	3	0	94	3	.96½	.50	97	.45	.46	131.24
Manufacture of felt and straw hats.....	20	310	294	10½	46	41	4	55	40	1	1.18	.52	41	.89	.86	258.62
Manufacture of dresses and fancy articles.....	0	300	304	11	80	.....	8	0	72	20	.....	.58	92	.59	.54	179.49
Manufacture of flowers and feathers.....	0	304	294	10	87	39	5	18	59	18	1.23	.77	77	.78	.78	289.67
Dyeing and cleaning establishments.....	25	293	288	10	20	15	4	50	46	0	1.12	.67	46	.85	.85	245.11
Bleaching establishments.....	5	303	297	10	7	.....	3	23	74	0	1.14	.65	74	.80	.79	237.39
<i>Wood industries.</i>																
Wagon making.....	25	343	308	9½	26	22	2	95	0	3	1.21	.....	3	1.21	1.23	375.42
Carpentering and joining concerns.....	20	315	291	10	44	27	3	96	0	1	1.34	.....	1	1.35	1.34	393.72
Saw mills and manufacture of molding and flooring.....	100	304	295	10½	26	19	2	98	0	0	1.16	.....	0	1.18	1.11	347.40
Box factory.....	15	307	292	10½	15	.....	2	63	23	2	1.10	.48	35	.89	.77	258.62
Bureau makers and packers.....	0	315	308	10½	12	.....	1	92	0	7	1.34	.....	7	1.25	1.19	386.00
Wood dyeing.....	25	307	300	11	0	.....	0	100	0	0	1.34	.....	0	1.25	1.14	358.35
<i>Cabinet and toy making.</i>																
Manufacture of furniture.....	15	314	296	10	25	12	3	83	11	3	1.50	.48	14	1.35	1.35	397.51
Manufacture of pianos and organs.....	20	311	301	10	.....	.....	2	89	0	9	1.27	.48	9	1.40	1.49	357.05
Manufacture of musical accessories.....	40	305	295	10	15	.....	3	75	8	14	1.16	.47	22	.94	.94	275.99
Modelers of machinery.....	40	341	296	10	39	23	0	93	0	7	1.40	.....	7	1.30	1.28	386.00
Manufacture of frames.....	50	308	275	10½	50	35	0	90	10	0	1.05	.64	10	1.01	.96½	277.92
Manufacture of traveling accessories and various articles.....	15	299	290	10½	17	15	4	86	5	5	1.32	.76	10	1.26	1.19	366.70
Manufacture of measures, canes, etc.....	10	308	276	10½	32	.....	0	100	0	0	.99	.....	0	.99	.97½	274.06
Manufacture of dolls.....	0	319	300	10½	64	.....	3	27	45	26	.87	.49	71	.61	.58	181.42
Manufacture of manikins.....	50	298	288	10	19	.....	0	50	50	0	1.38	.72	50	1.05	1.05	304.01
Manufacture of toys.....	10	301	293	10½	24	24	6	76	18	0	1.50	.72	18	.....	.....	.....
<i>Iron industries.</i>																
General iron works, bolt, spring, and edge-tool making.....	80	290	286	10½	15	9	3	92	1	4	1.23	.....	5	1.22	1.13	351.26
Manufacture of iron girders, etc., for building and construction in iron.....	20	307	288	10	55	48	2	96	0	2	1.21	.....	2	1.16	1.16	357.05
Manufacture of locks and safes.....	15	307	300	10	12	.....	3	97	0	0	1.32	.....	0	1.3	1.22	397.58

TABLE V.—Hours of work, variation in working force, composition of force, and average wages by industries—Continued.

Industries.	Motor power per 100 employees.	Average number of days of production in year.	Average number of days worked per employee.	Average number of hours in a working day.	Average variation in the working force per year of the different establishments in a working day.	Average variation in the whole working force of each industry per year calculated on a basis of 100 workers.	Proportion to each 100 employees of—				Average wages per working day.		Total number of females and children per 100 hands employed.	Average wages per employee.		
							Foremen.	Males.	Females.	Children and apprentices.	Males.	Females.		Working day.	Day of Year.	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
<i>Iron industries—Continued.</i>																
Manufacture of sheet-iron and heating apparatus.....	15	302	284	10½	38	28	2	90	7	1	\$1.24	\$0.53	8	\$1.19	\$1.13	\$337.75
Manufacture of iron fencing, etc., punching.....	30	325	310	10½	16	13	1	97	0	3	1.11	.50	3	1.04	.96½	322.31
Manufacture of iron furniture.....	0	325	305	10½	60	.....	2	95	0	3	1.02	.....	3	1.00	.96½	306.87
Manufacture of iron folding beds.....	0	300	302	10½	0	.....	17	77	0	0	1.60	.....	0	1.68	1.63	507.59
Wire making, hammering, and drawing.....	60	300	302	10½	18	11	3	90	5	2	.97½	.62	7	.97½	.94	293.36
<i>Iron foundries and machine construction.</i>																
Manufacture of various utensils.....	25	307	291	10½	18	15	2	89	0	9	1.09	.....	9	1.05	1.03	306.87
Iron foundry.....	15	313	289	10½	17	8	2	91	0	7	1.20	.....	7	1.18	1.11	339.68
Manufacture of machinery (iron and steel).....	25	303	277	10½	25	7	2	93	1	6	1.27	.60	5	1.25	1.18	347.40
Manufacture of electrical machines and installation of same.....	70	309	292	10	25	.....	2	92	1	5	1.34	.47	6	1.23	1.23	360.91
Electrical and steam-power plants.....	.....	364	356	10	20	.....	3	97	0	0	1.10	.....	0	1.11	.95	401.44

*Work in copper, brass, and other common metals.*

Manufacture of various utensils in copper and brass.....	10	292	279	10½	46	26	1	92	0	7	1.34	.....	7	1.28	1.19	358.98
Rolling mills for copper and other metals.....	100	313	314	10½	18	12	6	82	2	10	1.21	.84	12	1.17	1.14	3'6.70
Copper and bronze foundries.....	25	299	262	10½	28	26	3	95	0	2	1.10	.....	2	1.09	1.05	235.64
Manufacture of art work in bronze.....	3	300	288	10	10	6	4	92	0	4	1.24	.....	4	1.34	1.35	386.00
Apparatus for gas and electric lighting.....	0	305	295	10	50	26	4	91	0	5	1.34	.....	5	1.31	1.31	386.00
Manufacture of faucets and various objects in brass.....	25	300	253	10½	28	19	1	98	0	1	1.45	.....	1	1.35	1.25	341.61
Manufacture of surgical, optical, and other instruments.....	25	304	288	10½	7	3	4	82	6	8	1.48	.65½	14	1.32	1.23	380.21
Manufacture of musical instruments.....	15	292	285	10	9	8	4	65	24	7	1.12	.46	31	.93	.93	264.41
Manufacture of cut or stamped ware.....	25	300	268	10	25	.....	3	70	10	17	1.20	.41	27	.97½	.97½	200.55
Manufacture of buttons.....	15	298	295	9½	25	20	0	30	61	9	1.19	.42	70	.63	.65	185.28
Engraving on metals.....	0	307	283	10	12	.....	6	73	0	21	1.23	.42	21	1.04	1.04	255.29
Manufacture of tinware, lamps, etc.....	15	318	282	10½	25	15	2	96	0	2	1.46	.42	2	1.47	1.45	418.95
Manufacture of household utensils, toys, tin cans, boxes, etc.....	15	300	295	10½	20	20	2	49	42	7	1.07	.73	49	.86	.84	244.18
Type foundry.....	15	300	281	10	18	.....	0	56	30	14	1.37	.67½	44	1.03	1.03	289.50
Manufacture of zinc counters.....	0	333	324	10	25	.....	4	87	0	9	1.24	.....	9	1.22	1.22	307.58

*Precious and semiprecious metals.*

Gold foundry.....	100	300	298	10	0	.....	9	88	13	0	1.33	.70	13	1.25	1.25	374.42
Gold-beating establishments.....	5	303	293	10	12	7	7	24	54	15	1.32	.60	69	.76	.77	223.88
Nickel, gold, and silver plating, and manufacture of plated ware.....	25	301	289	10	15	7	5	63	25	7	1.24	.64	32	1.07	1.07	308.80
Manufacture of silverware.....	20	300	297	10	9	6	4	72	14	7	1.47	.83	21	1.32	1.32	311.79
Manufacture of jewelry, etc.....	0	299	287	9½	11	8	.....	61	18	17	1.71	.85	35	1.34	1.38	384.07
Manufacture of gold chains and fancy objects.....	10	289	288	9½	40	17	5	53	24	18	1.20	.52	42	.93	.95	268.27

*Stonecutting and polishing.*

Cutting of precious stones.....	25	290	290	10	23	.....	0	69	31	0	1.79	1.79	31	1.79	1.79	517.24
Marble works.....	40	307	301	10½	34	30	6	94	0	0	1.44	1.79	0	1.46	1.41	438.11

*Earth and stone construction.*

Construction of water systems.....	250	305	231	10½	260	.....	0	100	0	0	.99	1.79	0	.99	.95	229.67
Laying of electrical wires, etc.....	365	365	360	10½	73	.....	3	94	0	3	1.19	1.79	3	1.19	1.14	430.33

TABLE V.—Hours of work, variation in working force, composition of force, and average wages by industries—Continued.

Industries.	Motor power per 100 employees.	Average number of days of production in year.	Average number of days worked per employee.	Average number of hours in a working day.	Average variation in the working force of the different establishments in a year.	Average variation in the working force of the whole industry calculated on a basis of 100 workers.	Proportion to each 100 employees of—				Average wages per working day.		Total number of females and children per 100 hands employed.	Average wages per employee.		
							Foremen.	Males.	Females.	Children and apprentices.	Males.	Females.		Work- ing day.	Day of to hours.	Year.
<b>I</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>15</b>	<b>16</b>	<b>17</b>
<i>Earth and stone construction—Continued.</i>																
Building of canals and plumbing.....	5	315	285	.....	54	24	2	98	0	0	\$1.18	\$1.79	0	\$1.18	.....	\$337.75
Laying pavements and sewers, and rail- road building.....	0	350	311	10	54	50	3	97	0	0	.99	1.79	0	1.02	\$1.02	378.45
Public works and masonry.....	5	293	265	10	71	66	3	97	0	0	1.22	1.79	0	1.31	1.31	333.89
Bricklaying.....	0	350	311	10½	9	.....	0	100	0	0	1.27	1.79	0	1.29	1.20	401.44
House painting.....	0	331	307	9	100	74	5	92	0	3	1.26	1.79	3	1.24	1.38	372.49
Decoration.....	0	307	210	8½	128	.....	6	74	0	0	1.97	1.79	0	2.05	2.42	430.39
<i>Stone-Burning Industries.</i>																
Brick and tile making.....	100	303	288	10½	20	17	3	94	2	1	.99	.43	3	1.03	.99	297.22
Manufacture of china, porcelain, and earthenware.....	10	300	297	10½	10	9	1	86	13	0	1.77	.87	13	1.99	1.52	494.08
Manufacture of pottery.....	15	300	273	10½	4	.....	3	44	31	22	1.06	.69	53	.75	.70	204.58
Glass and cut-glass works.....	10	311	310	10½	16	9	3	61	13	23	.93	.42	36	.63	.71	231.60
Manufacture of mirrors.....	0	305	305	10½	.....	.....	3	41	44	12	1.42	.70	56	.96½	.91	293.36
Painting on glass.....	0	304	297	9	0	.....	0	100	0	0	1.16	.70	0	1.16	1.09	343.54
Manufacture of lenses and optical glasses.	7	305	297	10	7	.....	7	75	11	7	1.10	.58	18	1.08	1.08	398.10

	65	200	284	10	20	20	4	43	40	13	1.33	.52	53	.94½	
Manufacture of incandescent lamps.....	0	307	279	10	20	20	2	0	91	7	1.33	.48	98	.46	266.34
Manufacture of false pearls.....															190.31
<i>Résumé.</i>															
Alimentary products.....	85	319	300	11	22	22	4	69	27	1	\$1.11	\$0.56	28	\$0.95	\$87.57
Chemical industries.....	60	338	331	10½	20	10	3	77	17	3	.94	.52	20	.91	291.43
Manufacture of paper, rubber, etc.....	100	319	295	10½	16	8	3	64	26	7	1.04	.56	33	.87	252.83
Book making.....	15	304	298	10	20	13	1	61	22	16	1.21	.65	38	.98	295.29
Leather and furs.....	20	310	292	10½	22	5	4	56	33	7	1.14	.61	40	.92	267.67
Textile industries.....	50	302	292	10½	13	6	3	43	48	6	.97½	.52	54	.73	214.23
Manufacture of textiles.....	10	302	280	10½	30	22	2	42	52	4	1.18	.58	55	.83	231.00
Wood industries.....	35	318	298	10	22	13	2	94	3	1	1.25	.43	4	1.24	370.56
Cabinet and toy making.....	25	305	295	10	26	13	3	81	9	7	1.37	.65	16	1.19	253.19
Iron works.....	45	303	290	10½	30	16	2	93	2	3	1.20	.58	5	1.76	347.40
Iron foundries and machine construction.....	30	305	277	10½	24	5	2	93	1	4	1.27	.59	5	1.22	339.68
Copper, brass, and other metal industries.....	15	301	286	10½	20	6	3	73	18	6	1.26	.48	24	1.07	326.87
Precious-metal industries.....	20	300	289	10	13	5	5	57	28	10	1.32	.44	38	1.05	303.01
Stonecutting and polishing.....	30	296	293	10	28	22	2	83	15	0	1.79 1.40 1.79	1.79 1.79 1.79	15	1.66	486.36
Construction of canals, buildings, etc.....	1	324	253	9½	97	36	3	96	0	1	1.00	.58	1	1.21	306.87
Stone burning.....	20	305	297	10½	13	3	3	59	19	19	1.07	.54	31	.82	306.87
Wholesale business and transportation.....	5	331	.....	9½	21	.....	1	71	22	0	1.12	.77	22	1.13	145.11
Average.....	35	310	290	10½	23	3 to 4	3	71	20	6	1.19	.58	26	1.02	295.29
Government and municipal works.....	10	307	283	10	7	.....	5	45	49	1	1.21	.67	50	.94	270.20
Total average.....	35	309	290	10½	22	3	3	67	24	6	1.19	.61	30	1.01	291.43

STEPHEN H. ANGELL,  
Commercial Agent.

ROUBAIX, November 19, 1894.

## TECHNICAL AND TRADE SCHOOLS.\*

I.—German Technical and Trade Schools—(1) Drawing in German Schools; (2) Supervision of Technical Schools; (3) Clausthal School of Mines; (4) School for Marine Machinists and Engineers; (5) School for the Woolen Industry.

II.—Horseshoeing in Germany.

III.—The Brewing School of Ghent.

### I.—GERMAN TECHNICAL AND TRADE SCHOOLS.

#### (I) DRAWING IN GERMAN SCHOOLS.

I never knew the value of drawing till I came to Chemnitz. At Mannheim, its meaning as an essential part of a German education had just begun to dawn on me. I saw its importance to the jewelry trade at Pforzheim. The more I studied the question of German education, especially technical education, the more drawing I found. It is the beginning and end of all technical education.

A good knowledge of drawing makes a boy more useful to his employer than any other branch. It is believed here that to be able to make or build anything, one must be able first to draw it. Then, again, a drawing mechanic can carry home exact ideas of things seen. It is the custom, not only in Chemnitz, but in every city I have visited on the Continent, but more especially in Germany, to send out trained draftsmen to expositions and fairs for the purpose of copying designs, new machines, etc. How well they have done their work is seen in the manufactures of Aix la Chapelle, Crefeld, Plauen, Leipsic, Chemnitz, Frankfort, and Berlin.

The importance of this study may be seen in the many hours devoted to it from the kindergarten to the university. No other study in technical schools gets so many hours or more careful instruction. In day schools, evening schools, and Sunday schools it is the same thing—drawing! drawing! drawing! It is an aid, rather than an injury, to the memory. It trains the mind as well as the eye. It is as great an aid to the reasoning powers as is logic or mathematics. It is the very essence of both. One is always dealing with relations, making comparisons, seeking exactness. Besides, a sense of the harmonious and beautiful is developed.

What I want to point out is its practical value. The agents of houses in the United States who haunted the halls of sale in Roubaix, Lyons, and Troyes, ten or twenty years ago, now come to Chemnitz, Plauen, Crefeld, Gera, and Glauchau. It was formerly four weeks in Lyons or Troyes, and one or two days at Chemnitz, Crefeld, or Plauen. Now it is four weeks here and days in the French textile centers. I do not say that this remarkable change is entirely due to drawing and designing, but I do claim that a very large part of it is. Nor am I alone in my belief that drawing may be an excellent substitute for logic and mathematics, for I found, after I had begun this report, books published in Germany containing the same ideas.

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\* For previous reports see CONSULAR REPORTS No. 167 (August, 1894), p. 530.

The best auxiliaries to the imagination or fancy are the different styles of drawing. One author claims it as the best aid to technical skill for training the eyes; the best help to an appreciation of objective and perspective forms, and the appreciation of light and shadow. It is also regarded as a great aid to the understanding—to mental measuring. Goethe, the standard of what is best and most beautiful in German thought, is quoted everywhere as approving of drawing as a part of education. He says:

Considering the importance of drawing as a part of an education, one gets the assurance and conviction that his enjoyment of the physical world is beautified and increased thereby. The entire world of form and color opens itself to him. A new sense (organ) awakens, which receives the liveliest impressions. One learns to appreciate nature—to value, love, and rejoice over its beauties.

I always find technical teachers enthusiastic over the subject. I know what opinions manufacturers hold in regard to it; I know how eagerly the creations of French fancy (*fantasie*), and imagination are copied here and made cheaper than in France and sold all over the world. By and by, with a wider development of this art, Germany will not need to go to France for ideas. With the power to put down on paper the myriad forms found in the forests and fields, to make combinations, to depict things seen by the mind's eye, will come novelties and perfect independence. I append a few pages of drawings made by a teacher of drawing, upon returning to his room from visits to shops in which he was not allowed to make either notes on paper or drawings. He simply drew from memory.\*

## (2) SUPERVISION OF TECHNICAL SCHOOLS.

Schools, like laws, come up in a country with its customs and growth. They differ as much as do constitutions. The English and German school systems, for example, are not unlike the English and German constitutions in the matter of form, methods of enforcement, etc. Each nation has a system of its own, and it is very hard to say which is best. Nor do results really determine, for what might be best for one country might be bad for another. That there are general principles, true and good whenever and wherever put in practice, there is no denying. Race, religion, and even antecedent systems have influences. It would be wise in introducing any new system of schools into our country to find out and adopt the one that seems the best suited, that has stood the strongest tests, and has most analogies (as far as the people using it are concerned) with our own people and institutions.

*French system.*—Of European systems, the best organized is the French. It puts the technical schools under proper supervision. The Department of Agriculture takes care of (1) the Institut Agronomique, a school for agricultural engineers; (2) the national agricultural schools, designed to develop learned and scientific authorities on agriculture; (3) schools for practical work in agriculture farm schools intended for the simplest elements of an agricultural education, and schools for horticulture; (4) forestry schools,

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\* Filed in the Bureau of Statistics, Department of State.



recruited from the pupils who graduate from the Institut Agronomique; and (5) veterinary schools.

Under the Ministry of Commerce and Industry, are placed (1) the Central School of Arts and Manufactures at Paris; (2) the schools of art and trade; (3) the commercial high schools; (4) Superior School of Commerce at Paris; (5) watch and clock making schools; (6) practical schools for master workmen and skilled mechanics; and (7) schools for telegraphy.

Under the Minister of War are, (1) the polytechnical schools; (2) school of application of artillery and engineering; (3) school for sub-officers of artillery and engineering; (4) saltpeter and powder schools; (5) St. Cyr, a special military school; (6) cavalry schools; (7) school for under officers of infantry; (8) schools for special training in guarding the health of soldiers; (9) military school of medicine and pharmacy; (10) schools of military administration; (11) Prytance military, a school for sons of soldiers and sailors, in which the boys get a good military education free; (12) preparatory military schools.

Under the Ministry of Instruction and Fine Arts, are (1) Écoles Maternelles, a kind of kindergarten school; (2) primary schools; (3) superior primary schools (in these, besides the ordinary instruction of primary schools, the scholars get instruction or practical ideas about agriculture, commerce, and manufactures); (4) primary normal schools (there the candidates must be 16 years old at least, have diplomas from other schools, and must pass a competitive examination; if admitted, they must promise to serve in the public schools for six years; the courses are free); (5) superior normal schools for graduating professors for the primary normal schools (admission is only after passing a competitive examination); (6) superior normal school for training lady teachers for the primary normal schools (entrance examinations competitive); (7) superior normal schools for training teachers for secondary education (entrance examinations competitive); (8) superior normal schools for training women teachers for secondary education (entrance examination competitive); (9) superior schools for pharmacy; (10) law schools (in which are taught Roman, French, and international law and political economy; pupils must be at least 16 years old); (12) national school of or for paleography; (13) special school of living oriental languages (the purpose of this school is to train men for assistants, interpreters, etc., in the diplomatic and consular service); (14) practical school for deep studies (the Sorbonne; there are no conditions of admission; the purpose of the school is to aid students to perfect themselves in philosophic, scientific, and literary studies); (15) school of the Louvre, designed for the study of archæology and ancient civilizations; (16) School of Fine Arts, for training artists in painting, sculpture, architecture, and engraving (prepares its students for the contest for the "prize of Rome"); (17) national schools for the fine arts at Baurges, Dijon, Lyons, and Alger; (18) national school of the decorative arts; a school to teach designing (every branch of industry can have its captains and artisans trained to as near perfection as is possible,

in these schools); (19) national schools of decorative art at Aubusson, Limoges, Nice, and Roubaix; (20) national schools of design for young girls; (21) national conservatory for music and oratory (students, after passing competitive examinations, are taught music and oratory, free; it offers great encouragement to talents and real merit); (22) French school at Athens (to furnish France professors of Greek, history, archæology, etc.); (23) school of archæology at Rome (to furnish professors learned in the Latin tongue, Roman history, and archæology); (24) French school at Rome (this receives painters, sculptors, architects, engravers, musicians, etc., who have carried off the "prize of Rome").

Under the Interior Department are (1) national schools of deaf mutes, and (2) national schools for the blind.

Under the Minister of Marine are (1) naval school; (2) school in which is taught the application of engineering to maritime subjects; (3) colonial schools (in these are taught the colonists who come to France; also, young men destined to serve France in the colonies); (4) hydrographic schools; (5) schools for mechanics (intended for marine mechanicians); (6) school for marine pupils (a sort of training school for sailors' orphans; (7) school ship for training boys destined for marine service; (8) a school of medicine and pharmacy for the navy.

Under the Ministry of Public Works are (1) school of bridges and roads (the students at this school come to it from the polytechnical schools; it graduates, after three years, civil engineers); (2) school of mines; (3) school of mines for graduating practical directors of mining works; (4) school for master workmen for mines.

Free schools—(1) Free schools of political sciences to prepare persons for consular and diplomatic careers for the State council, for the treasury, and other departments; (2) special school for architecture; (3) high commercial school; (4) superior commercial schools.

It will be seen that the schools are similar to those of Germany, but somewhat better systematized, supervised, and arranged. It is, in my opinion, no small thing to have the schools properly classified and arranged under proper supervision. No general department is so well fitted to find out what it needs, to watch its schools, to take in what is good and throw out what is bad, etc., as the particular department itself. I would not oppose a department of education—France has one in her Department of Public Instruction—but I would put the schools of war under departmental supervision, just as France has placed the naval and agricultural schools under those respective departments. No man, it seems to me, can be so well fitted to find out the needs of farmers as men educated in the science of agriculture; so, too, no one can know the needs of navies or armies so well as trained naval and army officers. The French system is based on this belief. The success of the system has been remarkable. The progress of France in recent years in technical, industrial, and industrial art education is due in no small degree to the intelligent disposition of the burden

of direction and supervision, and a happy emulative spirit that has marked the zeal of directors in different departments.

In Germany, too, great—almost phenomenal—progress has marked the twenty years from 1874 to 1894. What the system lacks in symmetry has been more than made up by individual earnestness and the zeal of unions and manufacturers. The schools here are under the interior departments, or so-called cultus ministries of the different states. This is a source of weakness. If the schools here are strong it is in spite of the system; it is because an enlightend race has recognized their usefulness and worth. Cultus ministries are too conservative, and interior departments can not cover so wide a range as is taken in by modern education. National commissions, or commissioners of education, may be needed. As trained educators, they could consult with and advise department boards of education. To-day, so differentiated is scientific knowledge or training becoming, that specialists are needed among the different departments of national government.

### (3) CLAUSTHAL SCHOOL OF MINES.

Among the many mining schools of Europe, few, if any, are superior to those of Clausthal, in the Hartz Mountains, and Freiburg, in the mineral mountains of Saxony. It was my purpose, after a long, profitable, and pleasant visit to Freiburg's famous school, to describe its work. A more recent visit to Clausthal and its school, to the Hartz Mountains and their mines, convinced me that, for purposes of illustration intended to arouse interest in American readers, the Clausthal academy was the one to describe. Besides, situated right here in Saxony, should I do nothing but describe its schools and educational system, one might suppose that no other part of the Empire offered anything of the same kind. The fact is, all over Germany, the question of education, especially practical, technical, and industrial education, takes precedence of all others.

*History of the school.*—The nucleus of the present academy was opened about the end of the sixteenth century. Its origin was due to a desire to furnish regular and exact instruction in the mathematics and mechanics necessary to the successful mining of the many metals and minerals supposed and known to be in the surrounding ranges of hills. In succeeding centuries, or, better, perhaps, with each generation's infusion of new blood, additions were made to buildings and courses, until the present complicated and almost perfect system was attained. Besides its service to the State on whose soil it is situated, it has received from and sent back to every State in the Empire, and almost every foreign country on earth, trained technicians of almost every trade or profession calling for skill in chemistry, mineralogy, mechanics, mathematics, etc.

*Situation.*—The academy is splendidly situated within an hour by rail of Hanover, Brunswick, Magdeburg, Halle, and Cassel; half an hour from Hildesheim and Göttingen, and one and one-half hour from Leipzig, Dresden, and Berlin. It is surrounded by mineral mountains, into which shafts have

been sunk, and at whose bases are situated, in active operation, a great many smelting furnaces, machine shops, and factories. The value of these to the students is incalculable. Much of the success of the school is undoubtedly due to its favorable situation. It is because of this, for one reason, that I chose it as an illustration of what is best in the mining schools of Germany. For four centuries the Harz hills have been worked. To-day, in spite of tremendous difficulties, by means of scientific methods these mines are made profitable. The State exploits the mines and supports the academy; thus going hand in hand, they help each other. Within a circle of 3 miles from the academy at Clausthal, are the most important lead, silver, and copper mines and concentration and smelting works of the Upper Harz. Thus the student steps, if he wishes, from the lecture room to the mines and shops. He sees the theories of the schoolroom carried out in everyday practice where the returns are for money. Some of the mines are worked to a depth of nearly 3,000 feet, with veins 130 feet wide. To support the enormous pressure consequent upon such depth and width, exerted by the rock or superimposing strata, requires great engineering knowledge and skill. The instructive methods of walling and timbering furnish object lessons not soon forgotten. No one who has ever gone down into these mines and looked on their wonderful arrangements can come up without lasting impressions. There are tunnels, shafts, hydraulic pumps, and hoisting machines of many kinds. In the sinking of new shafts, only the most recently approved methods are employed, and the work is watched by the students, accompanied by explaining professors. In a word, the school is the center of mills and mines in which every lesson has a daily illustration.

One great advantage the boys have is in seeing all kinds of ores smelted. Ores of all countries come here to enter the crucibles and come out refined. This, I may say in passing, is true of the mining school at Freiburg. I may also take time and space to say that the Freiburg school, although more famous, perhaps, does not offer now nearly such good facilities as does Clausthal. Blowpiping, I was told, is better at Freiburg than anywhere else in the world. When I say that ores come from Australia, the two Americas, etc.; that gold, silver, copper, lead, copper sulphate, zinc oxide, zinc sulphates, sulphate of iron, Glauber salts, sulphuric acid, etc., are produced for commerce, one can easily see what a good chance the students have to combine the practical with the theoretical. As the ores differ, so do the methods of extracting the metals. Great gain is thus got out of this treating of foreign ores. First they pay in the factories or smelting furnaces and then are of inestimable value to teachers and students. It is not necessary in a report like this to enumerate the processes—all the best are employed. Then there are ditches, or waterworks, unequalled anywhere in the Empire for the mines and smelting works. High upon the Clausthal plateau, are seventy large reservoirs fed by canals nearly 100 miles in length. The water is led from these reservoirs through 50 miles of pipe, and furnishes 3,000-horsepower to mines and works.

*Excursions.*—Besides visiting the mines and shops round about, excursions are made to mines and shops in the hills and cities further away. The students go to Halle, Magdeburg, Hanover, and to the many small villages that abound. The German students get State aid to make these excursions, and all get reduced rates from the railroads.

*Object.*—The academy aims to give such a scientific technical training as will fit its graduates to take charge of mines and smelting works of all sizes and kinds.

*Courses.*—There are practically two courses—preparatory and advanced. The preliminary course aims to give those who wish to take the advanced or lecture course such a training as will enable them to get all the good out of the advanced course when they come to it. To this end the preparatory course carries them through the various works, plants, and machines until the student is familiar with technical terms, the *modus operandi*, etc. The course begins each year in the week following Easter Sunday and continues twenty weeks. The time is taken up eight weeks with mining, eight weeks with concentration of ores, and eight weeks with smelting. Each course costs 18 marks (\$4.28), and each has its separate instructor. The boys work from 6 to 12 a. m. under a foreman or workman who is assigned to assist them. In the afternoons they work up their notes. Once a week the instructor lectures, reviewing the week's work and outlining the work of the coming week.

In the advanced course, the lectures begin in October and close in July. At Christmas, Easter, and Whitsunday, there are vacations of fourteen days for the first two and eight days for the last. Programmes of the lectures are printed each term. Students who are wise will always consult some eminent professor as to what and how much to study.

*Collections.*—There are very valuable geological collections connected with the academy and for the use of the students. Besides, the Harz hills, in their geologic conformation, have undergone the deepest and widest research of any hills on earth, and great results have been obtained. Within the ranges were found all formations and eruptive rocks, except the crystalline slates and rocks of recent periods.

*Library.*—The academy has a library of 14,500 volumes, covering almost every scientific subject, but more especially mines and metals. Besides this, the library of the Royal Mining Department (13,500 volumes) is at the disposal of the students; also a collection of over 500 models, showing kinds and structure of veins, rock, etc., appliances of various kinds, ancient and recent, for mines and metallurgical operations; machines for dressing ores, for showing construction of supports, buildings, etc., supplemented by numerous charts and drawings used in illustrating lectures; work shops in which the models enumerated were made, as well as many more sent out into seats of learning all over the world; a physicist's collection of apparatus and models to illustrate lectures, used chiefly during the last two years; a chemical library, with working room for 50 scholars at one time, with all the utensils, etc., necessary for practical work, such as preparations and appa-

tus to illustrate lectures on chemistry, and preparations for chemical technology; an assay laboratory, with everything needed for wet and dry assays; five hundred excellent cabinet specimens to illustrate geologic conditions; a large collection of models of crystals, goniometers, optical instruments, etc.; a collection of Harz minerals (two thousand); a geologic collection, petrographic and paleontological in its make-up, with a complete collection of microscopic preparations and apparatus for work with the microscope; a collection from the Upper Harz; a general collection of useful minerals, consisting of small specimens from all countries and classified (these are used to illustrate lectures); a collection of metallurgical products, ores, furnaces, fuels, etc.; a collection of instruments such as are used in surveying mines, etc.; the library of a scientific club or society called "Maja" organized in 1848.

*Admission.*—To be admitted, students must be at least seventeen years old, and must give proofs of a sufficient preliminary education and good moral conduct. Germans must show a certificate that they have gone through a German school of nine classes; foreigners must submit proof of equal qualifications. There are special students who are let in on a belief that they have education sufficient to enable them to understand the lectures. Special students, after one year's faithful work, are given the privilege of becoming regular students by passing a good examination in elementary mathematics. Others can come in on sufferance, by a vote of the board of control, and can attend the lectures and look on at the practical work, for which they pay a fixed sum. Thus it is seen that no one who really is in earnest need fear that he will be turned away.

*Tuition.*—For one hour a week instruction in assaying, blowpipe, and volumetric analysis, 4.50 marks;\* one hour in any other branch, 3 marks; daily work in assaying, or in quantitative and qualitative analysis, 60 marks for the winter term and 45 marks for the summer term, and for one month, 18 marks; for assaying one day per week, 24 marks for the winter term and 18 marks for the summer term. Students pay for the breakages of glass, porcelain, utensils, etc. Tuition is to be paid in advance. My reason for setting down the tuition here is to show how cheap it is, and how easy it is for the Germans to get a good technical education.

*Examinations.*—Students may be examined on any subject taught in the school, and on everything in mining or metallurgy. If successful, they get diplomas and certificates of fitness, signed by the proper authorities. There are examination fees of 30 marks when three students come up at once, and 6 marks for each additional student. For the degree of mining and metallurgical engineer 75 marks are charged, and 60 marks if for one of these alone, *i. e.*, mining engineer or metallurgical engineer.

*Studies.*—(1) Trigonometry, algebra, (with analyses), analytical geometry of two dimensions, stereometry and analytical geometry of space, differential and integral calculus, and descriptive geometry; (2) physics, practical

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\* 1 mark = \$0.238.

physics, electricity and mechanical theory of heat; (3) chemistry, theoretical chemistry, practical work in the chemical laboratory (with qualitative, quantitative, and volumetric analysis, general part, methods of saturation and neutralization, analysis by oxidation and reduction and analysis by precipitation), chemical technology (nonmetals, salts of the metals, silicates, manufacture of gas and methods of illumination); (4) mineralogy, practical mineralogy, practical crystallography, general geology, special geology, lithology, micro-lithology, paleontology, practical geology, and ore deposits; (5) elementary mechanics, (introduction, mechanics of a point, mechanics of solids, mechanics of liquid, and gaseous bodies); higher mechanics, instruction in the construction of mechanics and elements of mechanics, treatise on machines (power machines, machines operated by heat, etc., machines operated by water or wind, or both; machines moved or worked by muscle; transportation machines for solids, liquids, and gases, and small motors); machine construction, mechanical drawing, and structural engineering; (6) concentration of ores and mining; (7) surveying; (8) metallurgy and fuels (general metallurgy, special metallurgy, encyclopædia of metallurgy, lectures on fuels, and metallurgy of iron); (9) blowpipe analysis and assaying (general part, special part, quantitative blowpipe analysis, practical exercises in qualitative blowpipe analysis, assaying general and special parts, and practical work in assaying); (10) general jurisprudence (historical, Roman, church, German, and Prussian laws, private rights—general doctrine, personal property laws, laws of obligation, laws of inheritance, and laws of persons in all their branches—state laws, German mining laws, general doctrines, possession of mines, mining companies, miners' customs); (11) political economy—trade statistics, and administration; (12) emergency lectures—physiology and anatomy of the human body and how to aid the injured (means, natural and artificial, general aid, aid in special cases, and transportation of the wounded).

I have merely outlined a most perfect and complicated system. The technician, teacher, or scientist, will see and know how to fill out under each heading. Americans told me that our mining schools are rapidly coming up to compete with the world's best. Americans learn in the three or four years spent at Clausthal to read, write, and speak German—a language in which are printed some of the world's very best works on mining, metallurgy, and the various sciences. Year after year, the world pays tribute to these schools to the number of one-third or one-fourth of the total number taught, as the following table shows:

Year.	Total.	Germans.	English.	Dutch.	United States.	South America.	Others.	Total foreigners.
1884-85.....	82	63	7	2	1	3	6	19
1885-86.....	119	99	7	1	2	4	6	20
1886-87.....	100	77	6	2	2	5	8	23
1887-88.....	113	89	5	4	1	4	10	24
1888-89.....	129	94	9	5	1	13	7	35
1889-90.....	150	107	16	4	4	11	8	43
1890-91.....	153	110	18	1	5	8	11	43

The increase in foreigners was many per cent larger than the increase in the number of native or German scholars. Of course, many come from countries needing just such knowledge as is here given. The mountainous mineral regions of South America, England's colonies, and the United States sent large numbers.

I do not enter into more minute details here for I see no good purpose to be subserved thereby. That there must be good reasons for the existence of such schools is evidenced by the presence in them of so many students from abroad.

#### (4) SCHOOL FOR MARINE MACHINISTS AND ENGINEERS.

Anyone familiar with the Germany of the years before 1866 and 1870, will find food for reflection when he looks back on those times and compares them with to-day. Germany has been revolutionized. Berlin's growth is paralleled only by that of Chicago. In nothing is this change more noticeable than in the merchant and naval marine of the Empire. The Clyde, with Glasgow, Belfast Bay, with Belfast, and the best shipyards of England find very close competitors in German shipyards. Bremen, Hamburg, Kiel, and Stettin are rapidly rising into as great importance as Glasgow, London, Liverpool, and Belfast. In searching the underlying causes of this phenomenal growth, not a few of the factors are found in recent adaptations of technical education to all branches of marine education.

All over the Empire, where shipping of any kind prevails, there are schools for teaching the technology of navigation, marine engineering, and machinery. Besides royal or imperial schools for this purpose at Berlin, there are small ones at Kiel, Hamburg, Bremen, and Flensburg.

The Flensburg marine school was established for the purpose of training marine engineers and machinists for the commercial fleets of the country; incidentally, for engineers and machinists for the river steamers and canal boats, for these latter are admitted. The rapidly increasing importance of the German merchant marine, the necessity of knowing the simplest, cheapest, and best methods of construction of ships if this country would keep up its well begun competition with Great Britain, were some of the immediate causes that called it into existence. It has come to stay; it does its work well; its record is a source of constant pleasure to its projectors; its future is secure; its past has paid its expenses one hundred fold, not in the success measured by money, but by the fame that goes many arrow flights beyond all monetary estimates.

*Classes.*—There are four classes corresponding with the four classes enumerated under the imperial law of July 26, 1891, regulating the examinations and diplomas of machinists for sea or ocean steamers. The first and second class have annually two terms of twenty-two weeks each, and the fourth class, two terms of eight weeks each. Besides these, the first and second classes have annually two preliminary courses of six weeks each. The expenses for first class are 50 marks (\$11.90); second class, 40 marks (\$9.52); third class, 30 marks (\$7.14); fourth class, 20 marks (\$4.76).



*Plan of studies.*—Class IV—German, mathematics, and mechanics, 9, 3, and 22 hours per week, respectively. Class III—German and penmanship, 10.; mathematics, 4; and mechanics, 22 hours per week. Class II—German, 4; English, 4; mathematics, 10; mechanics, 3; physics, 4; regulation of machines, 7; and drawing, 12 hours per week. Class I—German, 3; English, 5; planometry, 7; stereometry, 7; arithmetic, 7; trigonometry, 7; mechanics, 5; physics, 5; chemistry, 1; work on machines, 7; and drawing, 12 hours per week.

In the preliminary classes, they have English, 2; mathematics, 8; mechanics, 4; drawing, 8; and German, with special reference to technical terms, 10 hours per week.

*Entrance.*—To enter the third and fourth classes, scholars must have passed through an elementary school. Directions are given in the school prospectus that boys who wish to begin with the second class should commence by attending *Fortbildungs* schools and taking up drawing, German, and arithmetic. The second class prepares boys who take examinations to enter the imperial marine. The preparatory course is for those who lack knowledge necessary to enter or keep up with the classes they enter, or want to enter. Inasmuch as the imperial examinations are exceedingly strict and impartial, the students desiring to take such are urged to come only after having passed through the very best possible preparatory course. How severe even the examination for the various classes of machinists are, appears from the following extracts from the law of July 26, 1891:

*Class IV.*—To enter this class, machinists must have passed either five years among the machinists of an ocean steamer, or part of five years among such and the remainder in a machine shop; two years, at least, must be on board ship.

*Class III.*—The young man must first have served two years as a fourth-class machinist, and two years either before or after obtaining a diploma as a fourth-class machinist.

*Class II.*—The applicant must have served, after his fifteenth year, five years in a machine shop or on board an ocean steamer. Two years must have been served on board ship, and two years in the shop, at the very least.

*Class I.*—Applicants must have served at least two years on board ship as a machinist of the second class.

One may be examined for the second class without having entered the third or fourth classes, but to enter the third class one must have passed the examination and have served in the fourth class; to enter the first class, the candidate must have passed for and served in the second class. Only such time in a machine shop as has been employed in assisting in shipbuilding or repairing counts. Service as a fireman (feeding the boilers) counts only for the fourth class.

To obtain a fundamental, practical training, it is recommended to candidates to serve at least twelve months in a first-class machine shop, and, when possible, in a shipbuilder's machine shop; or with a locksmith and afterwards with a shipbuilding machinist. Apprentices are advised to put in their time of learning on small steamships, for the reason that they thus learn a great deal more and a great deal better. They are also urged to serve as

stokers or firemen, to the end that they may be better able to judge later, when they advance, in regard to the fires and work thereon.

It is not necessary to urge here the importance of such education where so much depends upon accurate knowledge. It is, or should be, some satisfaction to the thousands who go down to the seas in ships to know that every man on board, from the humblest fireman to the captain, understands his work and holds a certificate to that effect. That Germany is closing in on other nations, and that accidents to her merchant and naval marine are rare, are facts that are due in no small degree to her splendid technical schools.\*

#### (5) SCHOOL FOR THE WOOLEN INDUSTRY.

The founders of the Aix la Chapelle school of weaving, dyeing, and finishing, saw not only the necessity, but the wide and deep-reaching results sure to come from a school conducted as they determined to conduct this. It was opened in 1883, a little over ten years ago. It had its origin in a desire to have a technical school devoted entirely to the leading industry of Aix la Chapelle—the manufacturing of woollen cloths. Its success has been very satisfactory. Confined to one industry, it has been able to go deeper into that branch than would have been possible with half a dozen different branches. This fact alone has helped to make the school one of the best known in Europe. Year after year its list of students has increased, and its graduates have gone out to find ready and paying employment. The directors have done, are doing, and for the future are determined to do, all in their power to increase its usefulness. Restless energy has marked the efforts of its friends to get for it the very best teachers and “teachers’ helps.” These efforts resulted in the establishment in 1891 of a complete working system for spinning, weaving, and finishing, differing in no department or detail from what one finds in well-equipped and well-regulated factories. Aided by the State (Prussia), the city, the province, and the Union of Aachen, the committee built, at a cost of 500,000 marks, a school such as few cities possess.

*Divisions.*—There are three divisions—(1) spinning and weaving, (2) finishing, and (3) dyeing. Theory and practice are included in the plan of studies. So successful has been the latter that students from this school have seldom to wait long for a position after graduating.

The plan of studies is as follows:

(1) *Technology.*—(1) Origin and peculiarities of raw material; (2) microscopic and chemical examination or analysis of materials for spinning; (3)

\* Since the foregoing was written, I have been handed a German paper from the West containing a notice of a marine school or academy of the kind I have been describing, founded and endowed by Mr. W. H. Webb, of New York. The school is on Fordham Heights, on the Harlem River, near New York City. It answers a great need. It is splendidly appointed and endowed; it has for trustees some of the best shipbuilders in our country. Mr. Webb and his father were famous shipbuilders. They felt in all the years of their work the need of just such a school. Rewarded with wealth, the son has given to this and to coming generations what he never enjoyed—a chance to get a good scientific training as a boy. Such schools, however, in a country like ours, should not be left for private enterprise. States like Maine, New York, Rhode Island, Pennsylvania, and all our seaboard States, should have them as a part of the public-school system.—J. C. M.

general information regarding the production, preparation, etc., of fibers of plants and silks; (4) animal hair, kinds of sheeps' wool, etc.; (5) preparatory work from sorting up from the moment it goes to the carders or spinners; (6) spinning, all kinds; (7) twisting, all kinds; (8) the making of artificial wools; (9) preparation for the looms, drawing in, dressing, etc.; (10) weaving, all kinds; (11) special work on the Jacquards.

(2) *Weaving in general*.—Under this heading is taught everything known or necessary to be known about all kinds of weaving, from the simplest to the most complicated.

(3) *Instruction in mechanics*.—This branch is taught with special reference to mill and weaving machines; also mechanical drawing. Looms, mules, spinning machines, etc., are completely analyzed and explained. The principles of every movement and the relations of parts are gone into and over so thoroughly that nothing is left out or neglected.

(4) *Mathematics*.—Reckoning or mathematics is necessary in a spinning or weaving mill, especially for measuring and weighing yarns, changing gears, and keeping current and other accounts.

(5) Bookkeeping, banking, and exchange.

(6) *Industrial hygienics*.—Practical instruction in spinning, with special reference to the selection, preparation, etc., of wools and yarns; to weaving, this embraces the whole science and art from the handloom to the most complicated Jacquard.

*Time of teaching*.—The school is open five days in the week from 8 to 12 a. m. and from 2 to 5 p. m.

*Material aids to teaching*.—For theoretic teaching there are all kinds of apparatuses, utensils, and models; also samples from all parts of the world, and a library containing the very best books on the science and art of spinning and weaving wools. For practical work, there are machines run by a 35-horsepower steam engine. The machines are necessary to develop exact knowledge of all the underlying principles and skill in the running and adjustment of machines and parts. Much that seemed superfluous at first gradually impresses one as the really essential things to know. The hours devoted to following principles from the simplest machine up through every change to the most complicated are really the hours that count most when the young man has to take charge of a shop or factory. It is this knowledge that enables industrial captains to save in time and material many times their wages. One who has worked among machines, who has heard squeaking wheels or parts keep on squeaking in spite of wasted oil, who has seen boxes burn out and fifty machines come to a standstill—yes, a whole mill stopped because of unbalanced or uneven bearings—who has seen yard after yard of bad cloth come off while weavers and fixers were trying to find out the causes, must commend any movement, the object of which is the introduction of these schools.

J. C. MONAGHAN,

*Consul.*

CHEMNITZ, July 6, 1894.

## II.—HORSESHOEING IN GERMANY.

The Saxon school of farriery is so perfect in its organization that a brief report on the subject can not fail to be of interest to every man who owns a horse. In order that the reader may understand the system, he should first be in possession of a few extracts from the Saxon laws, which must be complied with before a man is allowed to practice the art of farriery.

## EXTRACT FROM SAXON LAW.

From January 1, 1885, only those persons have the right to shoe horses who have previously practiced the art up to December 31, 1884, and those who have passed a successful examination and have a diploma.

The examination must be held by examiners appointed or acknowledged by the State.

Any person who has practiced farriery up to December 31, 1884, but who has afterwards given up the practice, can not resume the practice of farriery without having first passed the examination referred to, or by special permission from the Department of the Interior.

Any person practicing the profession of farriery without complying with the regulations as above defined, will be punished under the provisions of the imperial penal code.

The Interior Department regulates the time and place of the examination.

The statement of the law governing farriery is followed by a long series of regulations regarding time and place of examination.

## VETERINARY SCHOOL.

The Saxon veterinary school, which we were allowed to inspect through the courtesy of the director, is one of the most perfect organizations of its kind. It is situated at Dresden, capital of the Kingdom, is under Government control and supervision, has among its faculty men famous as veterinary surgeons, and is attended by students from most of the nations of the civilized world.

The time required to graduate in all its branches is three years. The fees for tuition amount to 100 marks (\$23.80) per year for regular students; guests of all countries pay 200 marks (\$47.60) if they attend all lectures, or 5 marks (\$1.19) a week with choice of lectures.

The school grounds cover about 4 acres. The cost of erecting the building was borne by the State, and the amount required for the maintenance of the school is 90,000 marks (\$21,420) per year. The entire plant is maintained at the expense of the Government.

The stables, grounds, and rooms for lectures are all kept in a state of absolute cleanliness, the air being purified by disinfectants.

This report would be too long should we attempt to follow the student from class to class, or give a detailed account of the management of the institution. It therefore deals with the art of shoeing alone. Suffice it to say that State aid, strengthened by individual effort and earnestness, with all that art, science, and experience can accomplish, is found in this school.

The period of study required in the department of farriery is five months. After the student has been through the course of anatomy, and has attained a

perfect knowledge of the action of the muscles of the horse, and understands the wonderful harmony of the animal's construction, his mind is ready for the intricate art of shoeing. In five months he will have grasped all the knowledge that is required respecting the manner of making and fitting shoes.

The student, while in the shops, has the advantage of seeing numbers of horses and all kinds of hoofs on which he must operate, always under the eye and directing influence of trained instructors. Not only has he these, but, in the museum, he has a collection of papier-maché hoofs, plaster casts, diagrams, etc., representing every possible condition of hoof disease known; he has, also, for his guidance, a collection of shoes gathered from all parts of the world, from the first to the last invention.

The use of the muscles in connection with the hoof are clearly demonstrated by illustrations and drawings. All this the student has learned in his study of anatomy; the more direct instructions as to how a horse should be shod are given in part second of the instructions on shoeing.

#### INSTRUCTIONS.

##### *Part 1.*

(1) To judge how a horse should be shod; how to hold a horse while shoeing; how to take off the old shoe; how to prepare the hoof for shoeing; preparing the hoof to go barefooted; making shoes of all kinds; measuring and judging thickness and weight of shoe for certain horses' hoofs; driving nails.

(2) Shoeing horses that interfere and scrape their toes.

(3) Shoes for winter; sharpening by means of ice nails; sharpening by means of steel tips; inserting calks with screws; arrangement of various kinds of calks.

(4) Care of the shod hoof; care of the unshod hoof; smearing, bandaging, etc.

##### *Part 2.*

(1) General instructions regarding the shoeing of deformed hoofs, lameness, and division of hoof diseases.

(2) Hoof covering—Inflammation to which it is subject; bad nailing; stepping on nails; stepping on coronet; stern galls and stone bruises; injuries from dirt and snow balling under shoe; foundered hoofs; rotten hoof and horn, or hoof swelling.

(3) Change of hoof form—Flat and full hoof; buck and goat hoof; round hoofs; slanting or crooked hoofs; too sloping hoofs; ossified hoofs; split or cracked hoofs and treatment; horn break; loose hoofs; hollow hoofs; thrush, etc.

The above are some of the subjects that a student must know and know perfectly, in order to become a master farrier.

To enable persons to study farriery, and become masters in the art, under the laws governing the subject, the State has established in various parts

of the Kingdom schools of farriery, the Dresden school being the central or parent for the local schools, sending them instructors, etc.

#### EXAMINATION OF CANDIDATES.

At the examination, the State furnishes everything that may be required, with the exception of aprons.

The examination embraces the following points: Making shoes of ordinary form, for fore and hind hoof, and making shoes for winter; putting on the shoe; making and putting on shoes on malformed hoofs, and making of shoes for winter; examination regarding shoeing animals. The questions are asked by experts. Such interrogations shall cover three points, viz, (1) anatomy of the horse, preparation of the hoof for shoeing, and rules and principles of shoeing; (2) shoeing hoofs in good condition, and winter shoeing; (3) shoeing malformed and diseased hoofs

Diplomas covering different degrees of skill and knowledge are given. The candidates who exhibit specially good work and thorough knowledge of their business are given the title of *Gepruefter Hufbeschlagmeister* (master of scientific shoeing). To get this, the candidate must be twenty-one years old. The younger candidate who has passed a good examination gets the title of scientific shoer, with a special notice, and can, when he reaches the age of twenty-one, come up for a second examination, and, if he passes, will receive the title of master. Those who are of age, but have failed in the first examination to get the title of master, can, in one year from their last examination, come up for another examination for the title of master. Masters may take apprentices, and they enjoy other privileges, such as being called for consultation, etc.

Such are the wise provisions of the law governing farriery in the Kingdom of Saxony, and we believe that the same system exists over the entire Empire of Germany. The result is that the observing traveler will note that the comfort of the animal and the interest of his owner, so far as shoeing is concerned, are so carefully guarded that one seldom sees lameness incident to bad shoeing.

It is a fact to be regretted that in many countries the hoof is often made to fit the shoe, while the shoe should be carefully adjusted to fit the hoof of every horse by a scientific expert. If some such laws and regulations were in force in the United States much good would be done, much suffering avoided, the art of shoeing would be raised to a scientific position, and the humane interest which should fill the breast of every owner of a horse would be satisfied, for the comfort of one of man's most faithful servants would be as far as possible secured in that particular. In order that this object may be attained, we must have the intelligent worker—the farrier with the diploma, and in order to get him we must have the schools. Law on the subject is insufficient, unless we give with the law the means of getting the education, and this can be done only by the establishment of veterinary schools, in which the requisite education can be obtained. It can not be done by

private enterprise ; there must be an institution founded by and supported by the States where the education can be obtained at a nominal cost.

We believe that there could be no tax so remunerative to the farmer as a tax levied for the support of such an institution. The money spent for this object would come back to him a hundredfold. The farrier in the local town would not only put on the shoes, but would be able to give the farmer much sound advice regarding the care of his animals. This advice would be of worth, for it would be backed by a scientific knowledge of the subject.

In connection with this report, we have attached certain drawings that will explain the condition of the hoof, its correct formation and malformation, as well as the leg of the horse in its correct and incorrect positions.\*

The United States is to-day one of the great breeding countries of the world. We have expended vast sums for the improvement of our stock by getting the best from other countries. The value of our native and imported thoroughbred and pure-bred animals is enormous, and yet the United States is the only nation among the great powers which is without a national school where veterinary science can be studied. The success of the Dresden school, and such schools all over the German Empire, is proved by the remarkable scarcity of diseases of the hoof in consequence of bad shoeing.

J. C. MONAGHAN,

*Consul at Chemnitz.*

THOS. WILLING PETERS,

*Commercial Agent at Plauen.*

CHEMNITZ and PLAUE, *August 6, 1894.*

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### III.—THE BREWING SCHOOL OF GHENT.

The most recent statistics estimate the total quantity of beer brewed in Belgium during the year 1893 at 300,713,693 gallons. The amount of revenue taxes paid to the Government was \$3,030,903. The total quantity of beer imported was only 2,320,152 gallons, and the duty paid was \$136,377.27. Considering the interests involved in the manufacture, sale, and consumption of beer, it is natural that the country at large should take measures to protect all parties. On the one hand, the Government is desirous to secure its full revenue from this source ; on the other, the brewers are anxious to avoid excessive taxation and to reduce their costs to a minimum, while the public is interested in securing, for the least money, as its national brewerage, the best and most wholesome product possible. It is consequently not surprising to find that the Belgians are reducing the brewing of beers to scientific principles. The public demands that those who are engaged in this trade should be educated in those subjects which especially appertain to and affect their vocation. Two professional schools of brewing have accordingly been established in Belgium—one at Louvain attached to the university of that city, and the other at Ghent, which, however, is entirely

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\* Transmitted to the Bureau of Animal Industry, Department of Agriculture.

independent of its university. Of the 2,875 Belgian breweries reported in activity during 1893, not less than 1,000 are situated in the two Flemish provinces, of which Ghent is the chief city. Brewing, indeed, is one of the most important industries of this district. A particular interest, therefore, attaches to the subject of brewing in this vicinity. As a matter of fact, the brewing school at Ghent is considerably larger and more important than its competitor. The full name is "Superior Institute and Professional School of Brewing." It was founded in 1886 by the Brewers' Association of Ghent, in order to afford brewers and their sons the opportunity to study the process of brewing as a science. It is supported by that association, by the Belgian National Brewers' Association, by the Government, by the Province of East Flanders, and the city of Ghent. Brewers and superintendents of breweries are there afforded an opportunity to make practical application of the theoretical knowledge which they may possess. Gratuitous instruction is also given to foremen and other brewery employees. The courses are so arranged that brewers or their workmen may complete their studies in one year without any interference with their daily occupation.

#### MANAGEMENT AND INSTRUCTION.

The school is governed by a director and a committee of the Brewers' Association of Ghent. The director also acts as president of the faculty. The corps of instructors consists of seven professors teaching the following general subjects: Theoretical brewing; scientific study of brewing; practical instruction in brewing; bookkeeping; analytical, general, and applied chemistry; chemistry of fermentation, of bacteriology, and of industrial biological chemistry; mechanics; steam engines and boilers; general and industrial physiology; legislation affecting brewing; commercial law; industrial drawing and polarimetric analyses.

Three courses of instruction are offered, viz, (1) a gratuitous course of six months for brewery workmen, (2) a professional course of one year with an examination for the diploma of master brewer, and (3) an advanced course of two years (including, as its first year, the course last mentioned) with an examination for the diploma of brewing engineer.

In the first course, not only is the instruction given free, but all books, instruments, and materials necessary are also furnished without expense to the scholar. The tuition fee for the second course is 500 francs (\$96.50) per year, while for the third course, it is only 350 francs (\$67.55). When two brothers follow the same course, a reduction of 25 per cent is made; even a still less sum is received in the case of a poor, but extraordinarily bright, student. In addition to these regularly classified scholars, there are other free students who take part in such classes as they may elect. Upon the conclusion of their studies they receive only a certificate of attendance.

At the present time there are seventy-one pay students enrolled. Forty-six are in the second course and twenty-five in the third course. The number is increasing every year.



## COURSE OF INSTRUCTION.

The course of instruction is as follows:

(1) For the free course, instruction in brewing; practical course in the operation of steam engines and in the technology of apparatus employed in breweries; practical work at a brewery, and visits to neighboring breweries.

(2) For the professional course, and for the first year in the more advanced course, theoretical and practical brewing, elements of chemistry, elements of general physics, mechanics, technology of the apparatus employed in breweries, elements of bacteriology, legislation affecting brewing, commercial law, bookkeeping, industrial drawing, practical exercises in bacteriology, practical exercises in brewing, chemical manipulations, and visits to neighboring breweries.

All students are required to regularly attend the chemical, brewing, and bacteriological laboratories. They are further obliged to be employed in practical work at some brewery in this city, to be designated by the faculty. Brewers and their sons may work in their own establishment. In fact, at present, all the pupils are employed several hours daily in one brewery, where they are under the direction of a competent superintendent, who makes detailed reports of their progress.

(3) The instruction for the second year of the more advanced course includes scientific studies in brewing; analytical, general, applied, and biological chemistry; industrial physics, steam boilers and engines, microscopy and polarimetry, industrial drawing; practical exercises in brewing, analytical chemistry, and biology.

## EMPLOYMENT OF TIME.

In the free course, instruction is given on twenty-four Sundays only, alternately in French and Flemish, commencing the first Sunday after the 15th of October. The lectures occupy two hours of the morning; the visits to breweries are made during the afternoon. Occasional practical exercises occur during the week. For both professional courses, the first year is divided into two terms, the first extending from the second Saturday of October until the second Saturday of March, and the second from the third Saturday of March until the second Saturday of August. The classes of the first year meet only on Saturdays, from 9.30 a. m. to 12.45 p. m., and from 2 p. m. to 4.30 p. m. Each Saturday's instruction is divided as follows:

*First term.*—Industrial drawing and chemistry,  $1\frac{1}{2}$  hours each; brewing and physics,  $1\frac{1}{4}$  hours each.

*Second term.*—Industrial drawing,  $1\frac{1}{2}$  hours; bacteriology,  $1\frac{1}{2}$  hours; technology of brewing apparatus, 45 minutes; mechanics, 30 minutes; legislation affecting brewers and commercial law, 45 minutes; bookkeeping, 45 minutes.

Every student who is a candidate for a degree must submit to an intermediate examination at the end of each term. During the last term, five visits at least are made to city breweries; these are under the escort of a professor. During this term, the students are also required to assist in the brewing of beer according to different systems. A written report of each one of these experiments must be presented within fifteen days after its completion. These reports are considered in the final examination. At each experiment, an analysis is to be made of the raw materials used, as well as of the product obtained.

The second year of the more advanced course commences on the second Friday in October, and continues without interruption until the second Friday of the following August. The classes meet every Friday from 9.30 a. m. to 12.45 p. m., and from 2 to 4.30 p. m. The time is divided as follows: Industrial drawing,  $1\frac{1}{2}$  hours; biological and applied chemistry of brewing and kindred industries, such as distilling, and vinegar, sugar, and glucose making,  $1\frac{1}{4}$  hours; scientific studies in brewing, 45 minutes; industrial physics and analytical chemistry, 30 minutes each; polarimetry, 45 minutes; steam engines and boilers, 30 minutes.

Visits are made from time to time to various manufacturing establishments of all kinds for the purpose of inspecting the machinery employed.

An experimental brewery is attached to the school, where the members of this class are expected to make practical experiments and search for new methods in brewing. Students are required to present written reports describing and criticising what they may see during their various visits to breweries and manufacturing establishments. Likewise they must keep memoranda of the experiments which they may make at the school, and must preserve drawings, sketches, and designs made by them. All these reports, memoranda, and drawings, as well as the diligence of the pupils in their classes, will be considered at the final examinations.

#### EXAMINATIONS.

All applicants, before commencing their studies at this school, are required to pass an examination or to present diplomas, indicating that they have a proficient knowledge of the following branches: French and Flemish languages, geography, especially of Europe and Belgium; politics, population and industries of Belgium; arithmetic, algebra, and geometry.

The examinations at the close of the school year take place before a board composed of several members, of whom one each is appointed by the Belgian Government, by the Province of East Flanders, by the city of Ghent, by the Association of Belgian Brewers, by the Brewers' Association of each province, and by the faculty of the school. Each pay student is charged an examination fee of \$2.90, and each free student 97 cents. In order to obtain a diploma, or to be promoted from the first to the second class, the student must obtain in the examination at least one-half of the points indicated below in each subject. Any person failing to pass may repeat the course upon payment of one-half the usual tuition fee.

The pupils of the second year, who, in their final examination, receive one-half of the total number of points required, but fail to obtain the average required in any special branches, will be awarded only the diploma of master brewer. The diplomas indicate the proficiency of the student as follows:

	Points.
Satisfactory examination.....	500
Satisfactory with honorable mention.....	600
With distinction.....	700
With great distinction.....	800
With the greatest distinction.....	900

Students who have obtained their diplomas as brewing engineer (*Ingenieur-Brasseur*) may continue their practical exercises at the school another year at an expense of \$28.95.

As indicating the importance attached to the various branches of studies, a statement of the number of points attributed to each at the examinations may be interesting.

Examinations.	Points.	Examinations.	Points.
<i>For brewery foreman (free course).</i>		<i>For promotion to second-year class—Continued.</i>	
Diligence at lessons and required visits.....	100	Technology of brewing apparatus.....	150
Instruction in brewing.....	600	Commercial law and brewery legislation.....	50
Elements of mechanical technology, and of apparatus employed in breweries.....	300	Practical work, manipulations, etc.....	125
Total .....	1,000	Drawing .....	75
<i>For master brewer.</i>		Reports.....	50
Brewing.....	150	Tests .....	100
Elements of chemistry.....	125	Total .....	1,000
Elements of physics.....	100	<i>For brewing engineer.</i>	
Elements of chemistry of fermentation and bacteriology.....	125	Scientific studies in brewing.....	125
Technology of brewing apparatus.....	100	Chemistry of fermentations and bacteriology.....	125
Bookkeeping .....	50	Industrial biological chemistry.....	50
Commercial law and brewing legislation.....	50	Steam boilers and engines.....	75
Manipulations in brewing, chemistry, and bacteriology.....	150	Industrial physics.....	75
Reports.....	50	Analytical chemistry.....	75
Drawing.....	50	Polarimetric analyses.....	50
Tests .....	50	Bookkeeping .....	50
Total .....	1,000	Practical work, manipulations, etc.....	150
<i>For promotion to second-year class.</i>		Industrial drawing.....	50
Brewing.....	175	Reports.....	100
Elements of chemistry.....	150	Tests .....	75
Elements of physics.....	125	Total .....	1,000

## BUREAU OF ANALYSES.

A scientific station is annexed to the school. The analysis of beer, or the materials from which it is produced, is undertaken at a fixed tariff. The prices vary as follows:

Materials.	Quantity.	Tariff.
Barley.....	2 pounds.....	\$0.29 to \$2.90
Malt.....	do.....	.39 to 2.70
Grain.....	do.....	.39 to 2.70
Hops.....	¼ pound.....	.29 to .58
Water.....	1 gallon.....	1.93 to 6.76
Must.....	1 quart.....	.39 to 2.70
Beer.....	2 ordinary bottles...	.39 to 3.86
Yeast.....	.....	.29

A written report is made upon all analyses. Members of Belgian brewers' associations are given a discount of 25 per cent on the prices mentioned. A subscription ticket for forty specified analyses is sold at \$34.74. The cost to members of the brewers' associations is, however, only \$19.30 to \$24.13. Sterilized bottles are also furnished upon demand. Verbal consultations are free to members of the association and cost others only from 39 to 77 cents, according to their importance. Special reports are charged at 48 cents per twenty lines. Upon the request of any brewer, a member of the laboratory will visit his brewery upon the receipt of the railway fare and the fee, fixed at \$1.93 per day for an assistant, and \$3.86 for the director.

## SCIENTIFIC RESEARCHES.

Not only does this bureau undertake analyses for private individuals, but it is also constantly employed in experiments and researches tending to improvement in methods of brewing and affording a better knowledge of the materials employed. In this connection, the part taken by this school at the International Congress of Chemistry held at Brussels last August should be noticed. The section of biological chemistry devoted four days to the discussion of various subjects connected with brewing. Lengthy experiments had been previously made at this brewing school, and full reports of the results were presented to the congress. The chief paper of interest read was a report upon the "Use of Crude Grains in Brewing," prepared by Mr. Louis Van den Hulle, the director of the Ghent brewing school. In it he gave a very flattering and complete statement of the results of his various experiments with American maize, according to the different systems of brewing.

In view of the recent efforts of the Agricultural Department to introduce Indian corn into Belgium, the service of Mr. Van den Hulle ought to be mentioned. It was also through his courtesy that Mr. Charles J. Murphy, the special representative of the Agricultural Department in Europe, obtained

permission to address the congress upon the "Employment of Indian Corn."

To the first-named gentleman, I am indebted for the information contained in this report.

HENRY C. MORRIS,  
*Consul.*

GHENT, *November 12, 1894.*

### GERMAN COMMERCIAL CREDIT IN RUSSIA.\*

The steadiness with which the export of German chemicals, machinery, metals, and silk and woollen goods were not only maintained, but actually increased, during the eight months of the recent tariff war, and the enormously increased exports to Russia in all lines of trade which began immediately on the conclusion of the commercial treaty two months ago, have attracted expert attention to the fundamental trade relations which exist between the two countries, and especially to the terms of payment and conditions of credit which are offered by German exporters to Russian purchasers. That these conditions are satisfactory to the Russians is proven by their eagerness to purchase German merchandise; that the net result is satisfactory to the Germans is evinced by the enterprise and presistence with which they seek to extend and develop their Russian trade.

What, then, is the system of sales and credits which has enabled the German exporters, in spite of differential duties, strained political relations between the two countries, and the competition of rival nations to acquire and maintain such a commanding lead in the markets of Russia? From all that appears, there is in it nothing abnormal or mysterious. German supremacy in Russian trade is the simple result of good sense, patience, thoroughness, and energy applied to business affairs under conditions peculiarly favored by racial and geographical relations. The winning factors have been, first, the German system of long and elastic credits, and, secondly, the superior knowledge, skill, and industry of the agents who exhibit, advertise, and sell German goods in Russia.

The conditions upon which the credit system are based are rational and obvious. Russia is a country of vast area, poor in capital, but with enormous undeveloped resources. The people are generally ignorant, trusting, more or less improvident, and unskilled in the fine details of commercial economy. Such people naturally welcome and cling to foreign merchants who come among them, speak their language, study and supply their wants, and give them, in return, easy terms and long credits. It is the old story which has

\*In April, 1894, the consul-general at St. Petersburg was instructed to report upon German commercial credits in Russia. Copies of that instruction were transmitted to the consul-general at Frankfort, and the consul at Chemnitz, whose reports are herewith given. These reports were held over to this date, awaiting the report from St. Petersburg, so that the subject could be given at once in its entirety. The report from St. Petersburg, however, has failed to come to hand, and it was considered best not to withhold these reports any longer.

been so often exemplified in the dealings of England with people less advanced—the willingness of the buyer to pay a high price to a seller who will discover his real wants, provide for them better than the purchaser can do for himself, and wait a long time for his pay.

All this the Germans have been doing for the past twenty years in Russia. They began by bartering for and buying largely of the raw products of Russia—grain, hides, timber, wool, animals, flax, and minerals. They then introduced and taught the Russian farmers how to use improved implements and machinery. Clothing of all kinds, ladies' dress goods, and a large variety of articles of luxury, were similarly introduced in the cities and larger towns. Every want and need of the people, known and unknown hitherto, were studied and provided for. The goods were delivered generally on a credit of three months; then, if the buyer were unable to pay, the credit was extended without interest or undue pressure to six and even nine months, and this, in general terms, is the usage which prevails to-day in a large class of transactions.

Most German manufacturers who export largely to Russia have their own agents established at Moscow or St. Petersburg. These agents have in their employ skilled traveling salesmen, who speak the Russian language as well as German, and who are able to push the trade of their principles in a systematic and effective manner. Sales are uniformly made on bills of acceptance for six months without interest, and the German exporter reckons seven months as the average interval between the date of his invoice and the receipt of the money. Russian houses of first-rate standing and ample capital buy usually at three months' credit, and there are a few which are able to pay cash on foreign invoices of standard goods, but these cases are exceptional. The average credit is for six months, and buyers who receive shorter terms than this are granted discounts in proportion to the promptness of their payments.

The facilities which are open to exporters who have not their own special agents in Russia for ascertaining the standing and credit of customers are rather primitive, judged by modern standards. Ordinarily, a German manufacturer, on receiving a direct order from a Russian importer, applies to his local banker, or to one of the two commercial agencies who have offices throughout the Empire and furnish references in all countries, to ascertain the financial standing and business character of his would-be customer. The bank makes an informal inquiry through its Russian correspondents, and if the reports are favorable, the goods are shipped, generally on a credit of six months without interest. There is none of the drawing at sight against bills of lading; none of the cash-order business, which prevails so largely in the United States. The Russian purchaser is not required or expected to pay in advance for goods that he has not seen. If the purchaser fails to pay, as is sometimes the case, the seller has great difficulty in enforcing his claim, for the Russian laws and legal processes are cumbrous, primitive, and difficult to enforce in the interest of a foreigner. Millions of German

money have been lost in this way, to offset the many more millions which have been made, but as the prices charged have been generally high in proportion to the risk incurred, the Germans have come out a long way ahead on the general account, and they are recognized as the only commercial people who are never weary of giving the Russians credit.

To all this, must be added certain geographical and racial conditions, which alone, other circumstances being equal, would have been practically decisive in favor of the Germans. In the first place, the two countries are contiguous, and are divided for several hundred miles by a common frontier. St. Petersburg, Riga, and other Baltic ports are connected by easy and cheap navigation during the greater part of the year with Königsberg, Stettin, and Danzig, on the Baltic, and with Hamburg and Bremen on the North Sea. There is in the Baltic provinces of Russia a large German population, many of whom are bankers, merchants, and traders of various grades, and nearly all of whom have direct family and business relations with Germany. Most Russians who have any education beyond the merest rudiments speak German, and hundreds of young Germans are sent every year to complete their business education in a Russian bank or countinghouse, where they obtain a practical knowledge of the Russian language and business methods, and are prepared for effective and profitable service in extending the trade of Germany and Russia. Finally, the two countries are naturally and inevitably, not only in a geographical, but in an economic sense, the complement of each other. Russia has an immense area, sparsely peopled, with boundless undeveloped resources, limited capital, a large annual product of raw materials, and but few manufactures. Germany, on the other hand, lying just beyond the frontier, has a dense population, ample capital, diverse and highly developed manufactures, many of which are absolutely dependent upon the raw materials produced in Russia. This interdependence of the two countries is so fundamental and far-reaching that neither political friction, differential tariffs, nor the efforts of other foreign rivals have been able to overthrow it. The German was nearest at hand and first in the field; he studied the conditions with characteristic thoroughness, ascertained the wants of the people, provided for them, risked his money in the enterprise, lost some of it, waited patiently, trusted again, and his ultimate reward is that in many important lines of trade Germany controls substantially the markets of Russia. As a Russian economist has recently said:

The conservative German, in competition with the cautious Frenchman and often quite as cautious Englishman, risks, wins, and remains in markets where his rivals offer for cash much cheaper than he can do on credit.

The losses on German sales to Russia through bad debts and failures are stated on good commercial authority to be three times greater than those on similar exports to the United States. But in exact proportion to this risk, the Russian purchaser pays a higher price than the American for German goods, and out of this higher price the German exporter manages in the long run to recoup his losses, score a substantial profit, and help the Russian

people toward a higher development, more diverse and expensive wants, a higher commercial credit, and, in effect, a more complete dependence upon German supplies.

In many forms of machinery and implements, there is in Russia still a large field open to the competition of American and other manufacturers, but in order to achieve any substantial or permanent success, they must adopt the thorough, persistent methods, the long credits and patient waiting which have been practiced by the Germans until they have become the basis of mercantile usage in that country.

FRANK H. MASON,  
*Consul-General.*

FRANKFORT, *May 14, 1894.*

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The banking facilities of Russia are, as a rule, good. They are similar to those of Germany, bearing to them a much closer resemblance than to those of any other European country. There are imperial, provincial and city banks, corresponding to Germany's *Reichs*, *Staat*, and *Stadt* banks. There are, also, numerous private banks. Ninety-five per cent of these, I am told, are either in the hands of, or are managed by, Germans. The only exceptions are those in the hands of the Greeks, in the South. The Rothschilds are now in Russia, so too the *Crédit Lyonnais*, with offices or branch banks in Moscow, St. Petersburg, Odessa, and Tiflis.

The banks do all that they can to make business move smooth and easy. The *Reichsbank* allows "solid" houses from any country as large credits or fair discounts as they could get in any other country. Rates of interest, I am told, are high. Many Germans save a great deal by buying from Greek merchants (in the South), sometimes direct, and through friends, bills of exchange on French, English, Spanish, and other continental cities.

*Credits.*—Credits are long—six, nine, and even twelve months being the limits. The latter had their origin in the old system prevailing at the great annual Nizni-Novgorod fair. Credits were given from one fair time to the next. Since the introduction of railroads, the post, and telegraph, a change has taken, or is slowly taking, place. Acceptances prevail. In making sales, merchants are compelled to give written evidence to the buyer of each sale, but get from him no evidence of purchase. Later, should the buyer, because of embarrassments, or any reason, refuse to take the goods, it is hard to compel him to do so or to make him pay damages.

*Securing debts.*—To secure debt in Russia is no easy task, and this applies to Russians as well as to foreigners. Some Russians will, it is said, let a small portion of a debt remain unpaid at the end of the year, to which at the end of the next year they will add a little more, and so on for ten to twelve years, at the end of which time, instead of making an effort to pay or to compromise, they fail, pay as little as possible on the dollar (or ruble),



arrange their affairs, and begin again by buying from the very same parties from whom they formerly got credit. Most of the foreign trade is done by agents and commission houses. These keep their principals posted as to what firms are good, bad, and indifferent. In this matter, Germany has the advantage of having Germans in almost every large commission house in the Empire. These agents are exceedingly shrewd. Masters of many languages, they meet customers and talk to them in Russian while showing samples. Usually, these agents represent half a dozen or more kinds of goods—from pins and needles to locomotives. When they go to sell locomotives, their cards announce them as agents of locomotive-making firms, etc., saying never a word of pins and needles; and when they go to sell pins, needles, sewing machines, or agricultural implements, their cards say nothing about locomotives.

*Russian debt laws.*—A rapid change in the laws of Russia covering the collection of debts has taken place. To-day, it is not much more difficult to collect in Russia than in Germany. The legal system is being remodeled very much on the basis of all that is best in the German system. The processes are somewhat slow, but they are being steadily improved. Of course, for foreigners, unfamiliar with the laws and language, collection by law seems, and undoubtedly is, somewhat more difficult than for Russians. Good debts can always be collected. The judges are said to be very just and above reproach. It is always best to bargain beforehand in a manner as definite and clear as possible. The laws do very little to remedy neglect.

*Standard of commercial honor.*—This is as it is everywhere else on earth. There are dishonest Russians, and Russians as honest and straight and conscientious as any people in the world. There are houses in Russia whose word, given in any way, is as good as gold. Business, to be permanent, must be based on strict integrity. No nation knows this better than Russia. Men with whom I talked—one of whom had been thirty years in Russia and another twenty-six years—told me that their experiences had been profitable, pleasant, and satisfactory. The prejudices prevailing in Europe against Russian commercial methods are based on the same foundations as those that prevail against other prosperous, industrial, progressive people, viz, ignorance, jealousy, and prejudice. It is wrong to arraign a whole nation for the faults of a few.

*General remarks.*—The United States, Germany, and England furnish machinery of all kinds to Russia. American machinery, as a rule, is preferred, but is seldom properly pushed. Mowers and reapers are exclusively American. So, too, are most of the tools. Steam thrashing machines are imported almost, if not quite, exclusively from England; horse (thrashing) machines, small thrashers, harrows, plows, etc., are imported from Germany. Great efforts, under Government encouragement in the form of subsidies, were made to produce all these things in Russia, but the efforts failed. Engineers, technicians, and mechanics had to be imported at great expense—so great that no profit was left; nor did the Russian laborers take hold quickly

or cleverly enough to brighten the prospects. The result was that the factories turned to the manufacture of the simplest things, leaving to the United States, Germany, and England the complicated ones.

The preference for American tools and machinery is based on their lightness, combined with toughness and durability, and on the ease with which they can be handled and operated, and their wonderful adaptability for the work or purposes for which they are designed. The German and English are too heavy.

England and the United States are handicapped by not having the right kind of English and American agents to represent them, not only at Nizni-Novgorod, or the great fairs, but all the year round at or in the great cities and trade centers. Herein is where the German does his work well. The principal houses of St. Petersburg, Moscow, Odessa, Riga, etc., are German. The mines are in the hands of Germans; so, too, the great oil wells in or near Baku, in the south by the borders of the Black Sea, worked by Gebrüder Nobel. The Nobel brothers are Germans. German scientists, mechanics, and engineers are found in every part of the Empire. They are the pioneers of trade. French influence is fast yielding to German. With these two languages—French and German—it is possible to travel from Riga to Tumen, or from the Black Sea to the Arctic Ocean.

Again, the German gets orders because he is willing to give the Russian just what he wants. To no one factor does Germany owe more than to this. The Germans study to find out each people's needs and wishes, and, these discovered, they go to work copying, changing, and designing until they give just the thing desired. You can not tell an Englishman, or an American, for that matter, that he can not make a knife, shovel, harrow, etc. "We've been in the business too long; we've made knives, etc., two hundred years now, and should know what is best," etc. In such talk, the German never indulges. He takes home a sample or drawing of what is wanted, manufactures the same, and ends by effecting sales.

The recent reduction of Russian tariff rates on raw iron from 35 to 30 copecks removes the differential tax or tariff that discriminated against the iron industries of Upper Silesia, and in favor of imports of iron by sea. Notwithstanding the 100 per cent ad valorem import duties, Russia took, in 1891, 62 123 tons (tons of 2,000 pounds) of raw iron from England, and 5,890 tons from Germany; in 1892, from England, 69,729 tons, and from Germany, 6,560 tons. The production of raw iron in Russia is unfavorable except in a very few provinces; this, largely, because of the absence of coal deposits, and the cost of transportation. For many years, locomotives were "fired" with wood, and recently petroleum has been used. The consumption of iron, per capita, in Russia, is only 17 to 19 pounds, while the consumption in Germany is almost 220 pounds. The high rates of import duties and the unfavorable conditions referred to, make iron very dear in Russia.

According to the statistics of both countries, Germany sent the following quantities of iron and steel to Russia:

Articles.	1889.	1892.
	<i>Tons.*</i>	<i>Tons.*</i>
Iron and steel.....	31,435	23,681
Iron and steel rails.....	1,077	1,280
Sheet iron.....	12,603	9,350
Angle iron.....	5,380	5,075
Wrought and rod iron.....	36,227	24,090
L-ops and ingots.....	456	137
Sheet and plate.....	15,443	6,696
Total.....	102,621	70,309

\*Tons of 2,000 pounds.

Germany beats England in Russia in angle, wrought, rod, sheet, and plate irons. Against the figures given above for Germany, England sent 27,129 tons of angle, wrought, and rod iron, and 35,787 tons of plate and sheet iron in 1892. The reduced rates will not only enable Germany to hold what she has already secured, but to increase it very materially.

Germany sent to Russia iron of all kinds, not counting locomotives, railroad carriages, etc., \$9,996,000 worth in 1880, and only \$2,998,800 worth in 1892. The great decrease is due to the reduced importation on the part of Russia of iron wires, and coarse iron. The iron-wire works in Russia have been so organized and developed that no reduction, no matter how large, of the tariff rates, would favor imports. This is almost true, too, of rails. I may say here that the Russian railroads are rapidly being absorbed by the State, and that the Government is making every effort to be independent of the outside world in everything that pertains to their building and equipment, because of their military importance in the mobilization of troops and strategic purposes. In recent years, Russia has made most of her own boilers and tanks. There is a demand for boilers of both high and low grades. What Russia really wants is the kind of machinery that has been so successfully used in the United States.

Germany sends a great deal of card clothing to Russia. The reduction of rates on this for France, made in 1893, is to Germany's advantage now. One-third of all exports of card clothing from Germany (\$714,000) goes to Russia; she also sent yearly \$476,000 worth of shovels, spades, and cutlery. Here, too, the recent reductions will help Germany.

The exports of locomotives and portable steam engines, and machines from Germany to Russia were as follows for the years specified:

Year.	Locomotives and portable steam engines.		Machines.	
	Tons.	Value.	Tons.	Value.
1880.....	3,985	\$975,800	19,413	\$2,951,20
1885.....	608	130,186	8,610	1,309,000
1890.....	239	62,065	12,609	2,142,000
1892.....	132	35,914	11,908	1,808,800

Germany hopes to gain a good deal by the reduced tariff rates in dynamo-electrical machines.

Russia must import iron wares, and as the Russians believe American manufactures are the best suited to their wants, they are willing to buy from us, but we must canvass the market. The vast steppes—not unlike our prairies—are rich in soil. Grain grows abundantly, as with us. The agricultural machinery that has been so successfully used by our farmers is what the Russian farmers require. They take a great deal of it now, and are ready to take more. The traditional good will felt for our country is not a myth, but a potent force.

J. C. MONAGHAN,

*Consul.*

CHEMNITZ, *May 10, 1894.*

#### SUPPLEMENTARY REPORT.

Of the countries doing business with Russia, Germany, both in imports and exports, has the largest share. In 1891, Russia exported goods to the value of \$427,515,641, and imported goods to the value of \$224,925,600, showing an excess of exports of \$202,590,041, 15.5 per cent more than in 1890, and 3.8 per cent above 1889, but 15.2 per cent below 1888. The exports from Russia to Germany in 1891 show an increase, as compared with 1890, of \$8,895,000, while the imports from Germany show a decrease of \$6,641,600.

The exports from Russia to England fell off from \$155,793,300 in 1888 to \$102,351,800 in 1891, and England's exports to Russia from \$53,664,000 to \$42,819,400. Holland, Belgium, Sweden, and Norway also show losses, while Italy, Austria-Hungary, and Roumania show gains. Besides, Russia is also buying a great deal in China and Egypt.

The articles which composed the foreign trade of Russia in 1891 are given as follows:

Class.	Imports.	Exports.
Articles of food.....	\$46,064,240	\$251,216,741
Raw and half-manufactured articles.....	131,173,379	147,309,502
Animals.....	953,951	9,914,960
Manufactures.....	46,734,030	19,074,438
Total.....	224,925,600	427,515,641

The table following shows the imports and exports into and from Russia from and to the several countries in 1891.

*Imports and exports of Russia in 1891.*

Countries.*	Imports.	Exports.
Germany.....	\$61,112,882	\$113,575,511
Great Britain.....	41,898,418	102,354,765
France.....	9,364,686	25,702,399
Netherlands.....	1,837,707	22,819,226
Italy.....	6,170,165	17,679,209
Austria-Hungary.....	9,173,710	17,210,639
Belgium.....	3,674,128	11,965,554
Turkey.....	3,466,678	6,679,350
Denmark.....	758,447	5,995,823
Greece.....	642,219	5,912,210
Roumania.....	462,540	5,277,207
Sweden.....	1,822,682	4,518,660
Spain.....	545,560	2,362,327
Norway.....	1,084,197	1,596,355
Egypt.....	10,650,873	1,104,166
United States.....	23,650,995	483,295
China.....	8,508,957	50,998
All other.....	40,100,156	82,227,446
Total.....	224,925,600	427,515,641

\* The imports and exports given in this table represent the trade over the European frontier only, while the totals represent the total trade of Russia.

*Production of iron and steel in Russia (Finland not included) and Germany in 1875 and in 1892.*

Description.	1875.	1892.
Russia:	<i>Tons.</i>	<i>Tons.</i>
Raw and cast iron.....	535,000	984,216
Rolled iron.....	305,000	450,804
Steel and steel manufactures.....	65,000	372,757
Total.....	905,000	1,807,777
Germany:		
Raw iron.....	2,029,389	4,937,461
Cast, wrought, etc., iron.....	2,463,106	5,176,615
Total.....	4,492,495	10,114,076

The iron-producing districts of Russia are shown in the following statement:

Districts.	Castings.	Merchant iron.	Steel.
	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>
Ural.....	476,288	283,944	69,052
South.....	309,601	40,505	153,390
Poland.....	157,813	66,303	72,080
Near Moscow.....	116,926	67,402	43,787
North.....	380	34,956	67,500
Siberia.....	4,557	2,960	29
Total.....	1,065,565	396,070	405,838

Of the steel, 207,000 tons were rails, of southern Ural, northern, trans-moscow and Polish manufacture. The increase in these products in 1892 was as follows, in percentages: Castings, 8.6; other irons, 11.3; steel, 31.8.

The system of keeping and comparing statistics in Russia is far from perfect. From the best sources there seems to have been imported into Russia from England and Germany iron, etc., as follows:

Description.	1889.	1890.	1891.	1892.
Cast iron in bars.....	\$2,163,060	\$3,291,200	\$2,941,280	\$3,552,720
Merchant iron.....	3,184,420	4,243,200	3,984,960	3,652,280
Sheet iron.....	2,141,400	2,624,800	2,496,530	2,656,680
Steel.....	1,181,700	1,570,800	1,583,310	1,949,280
Iron and steel wares.....	6,395,850	7,316,800	5,858,540	6,251,320
Machines.....	12,319,560	13,874,000	12,802,870	13,244,600

Under the heads of iron and steel ware and machines are included cutlery, scythes and sickles, tools, engines of all kinds, and agricultural machinery.

Excluding machines, the ratio of Russia's import of iron and iron wares to her own production is from 23 to 25 per cent, using from 8 to 9 kilograms per capita, of her total population, while Germany uses between 75 and 100 kilograms.

Russia has iron and coal in her hills, but not near each other, except in a few places—in the Donetz Mountains, in the southwest on the Ural, and in the Caucasus. These conditions and Russia's rapidly increasing need of iron and steel manufactures keep up prices, and against England, Germany, and Sweden, unaided, competition is impossible. The Government and private railroads, the iron workers, builders, and farmers buy their rails, half manufactured articles, beams, girders, and columns, and machines at exorbitantly high prices—that is, when they buy from the home producers, who are protected by high tariffs and helped by large subsidies. In the rural districts, in the steppes, and on the plains, not an intensive, but an extensive, system of cultivating the fields prevails. To carry this on successfully, machines are needed. The farmers, just emerging from poverty, are too poor to pay high prices or cash, hence the need of foreign manufactures, which are cheaper and better than the home goods. America's agricultural machinery, especially mowers and reapers, are preferred. Our tools, too, are chosen before all others. Up to 1872, Russia had moderate tariff rates on iron. Since that time, a protective system, that culminated in practical prohibition, has prevailed. Last year, a tariff war was declared against Germany; this year, all is changed. The reductions are so considerable that Germany hopes to get back her old trade. Some say that subsidies are to knock all these hopes in the head. The fear is that the premiums to be paid will be so large that Russian manufactures will be able to undersell all foreign competitors, covering losses by premiums, and thus completely cut off or shut out compe-

tition. If the Government gets enough good out of other branches to allow this, the fear is not unreasonable. The Russians are rapidly learning to utilize all the resources of diplomacy. Then, again, the demand that duties be paid in gold rubles, if insisted on, is going to help Russia.

J. C. MONAGHAN,

*Consul.*

CHEMNITZ, *May 10, 1894.*

### AMERICAN LUMBER IN DENMARK.\*

The conditions in Denmark seem so favorable to American lumbermen that I deem it best to say a few words on the subject. In the first place, the local supply is wholly inadequate to the demand, and Denmark depends on outside sources for her timber. In fact it is the effort both of the Government and landed proprietors to cultivate and not cut down the forests.

The lumber trade is principally supplied from Norway, Sweden, and the United States. American white oak is held in the highest esteem here, being far superior to the Danish article, which is scarce and poor in quality. One firm, which I consulted, carries only American oak, and is of opinion that this particular wood has splendid chances in the markets of Denmark. It is more in demand than any other American wood. Walnut, poplar, and pitch pine have also good chances here. Elm and ash are not so much used. They have been imported, but are of no importance now. Boards, planks, and sawed lumber are generally preferred and have the quickest sale.

All lumber shipped for sale in Danish markets should be thoroughly dried and seasoned, and American dealers will find it to their interest to bear this fact in mind. For instance, it is said that green walnut logs must be kept two years before using. Oak is used for furniture, shipbuilding, and house building, and should be shipped in planks and boards, unless otherwise specially ordered. Walnut is used for furniture, and should always be shipped in boards. Pine is used for ship and house building; poplar for veneering, billboards, and furniture, also in the manufacture of pianofortes and carriages. Poplar is also used largely for stoppers to beer kegs, liquor barrels, etc. There is much demand for this wood, and it may be shipped in boards or logs. Maple, I think, also has a future here for veneering and inlaid work.

There is no duty on oak imported into Denmark. Other woods pay a duty of 13 öre ( $3\frac{1}{2}$  cents) per cubic foot.

The opening of the free port of Copenhagen affords a good opportunity to American dealers. Lumber shipped in bulks can be stored at low rates in the ample yards of the free port, and from there be distributed to the various ports of the Baltic, according to the demands of trade.

\* Received too late for publication in Special Consular Reports, "American Lumber in Foreign Markets."

The free port being considered foreign territory, there is no duty on goods entering to be reshipped on sale. Only when sold for use in Denmark, will the customary duty be exacted.

The following are some of the principal lumber men in Copenhagen : Th. & O. Bröchner, Store Kongensgade 63 ; A. Chr. Hensen & Co., Agents, Österbrogade 3 ; Aubertin & Co., Nörrebrogade 177 ; Westphal, Thedin & Co., Nörrebrogade 209 ; Emil Mottlan, Nörrebrogade 116. American dealers can correspond directly with these firms as to prices, terms, etc.

ROBERT J. KIRK,

*Consul.*

COPENHAGEN, *December 12, 1894.*

### GERMANY'S TRADE WITH RUSSIA.\*

Since the new Russo-German commercial treaty went into effect, imports from Russia, especially grain, have increased to such an extent that it appears advisable to call the attention of the American trade to this fact. As is demonstrated by the following statistics, the exportation of Russian wheat to Germany during the first ten months of the current year has increased more than tenfold, and that of Russian barley nearly 70,000 tons as compared with the previous year. On the other hand, Germany's demand for Russian petroleum is perceptibly on the decrease, 54.2 per cent less being imported this year. This indicates that American petroleum has gained almost full control of the German market.

Exports from Germany to Russia are likewise continually increasing as compared with last year. The exportation to Russia of German flour, peeled grain, lump coal, bar iron, and machines made of cast iron show a large increase.

Following are the exact statistical data as published on the 2d of this month (December) by the Bank and Trade Journal of Berlin:

*Russian exports to Germany during the first ten months of 1893 and 1894.*

Description.	1893.	1894.	Increase.
	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>
Wheat.....	15,966	188,705	172,739
Rye.....	59,154	407,925	347,771
Oats.....	7,642	249,444	241,802
Barley.....	207,840	276,560	69,720
Indian corn.....	8,938	98,874	89,936
Bran.....	118,088	216,113	98,025
Linseed.....	34,337	41,971	7,634
Rape seed.....	8,661	22,432	14,821
Pease.....	18,249	60,892	42,743
Oil cake.....	67,022	84,094	17,072
Poultry.....	8,832	11,633	2,801
Eggs.....	19,761	26,692	7,929

\* See CONSULAR REPORTS No. 171 (December, 1894), pp. 495 and 504.



A very considerable decrease is shown in the importation of the following Russian products:

Description.	1893.	1894.	Decrease.
	Tons.	Tons.	Tons.
Sheep and goat skins.....	1,927	1,154	773
Calfskins.....	3,865	2,746	1,119
Petroleum.....	30,585	14,010	16,575

*German exports to Russia during the first ten months of 1893 and 1894.*

Description.	1893.	1894.	Increase.
	Tons.	Tons.	Tons.
Flour.....	27,438	31,485	4,047
Peeled grain.....	5,886	18,414	15,628
Lump coal.....	107,126	142,034	35,908
Coke.....	93,078	111,672	18,594
Rough ironware.....	7,592	9,681	2,089
Bar iron.....	29,443	69,999	40,556
Sheet iron.....	12,140	22,504	10,364
Hardware.....	571	810	239
Machines.....	8,318	15,838	7,520
Sugar.....	8,225	7,253	972
Seeds.....	3,598	1,536	2,062
Copper (unwrought).....	3,235	1,600	1,635
Sheep's wool.....	2,298	1,423	875

It is clearly evident from the foregoing that Russian agriculture is reaping the most benefit from the new commercial treaty, whereas, on the other hand, the German iron industry has, until now, profited most. The hopes which the German textile industries based on the conclusion of the treaty appear not to have been realized so far.

In connection with the statistics published, the journal mentioned speaks of the importation of American grain as follows:

The ability of an article to compete with the same product produced elsewhere depends, to a great extent, upon the cheapness with which it can be transported. Volumes have been written about the competition of America, India, and the Argentine Republic in the exporting of grain, and it has repeatedly been stated that foreign competition will, in the end, destroy German competition. The correctness of this statement appears to be clearly demonstrated by the following facts: For the transportation of Silesian wheat to the Niederlausitz, a freight rate of 7 marks (\$1.67) per ton (40 cubic feet) is made from Breslau to Fuerstenberg, on the Oder, a distance of a few hundred miles, whereas a ton of wheat can be transported from New York to Hamburg for 6 marks (\$1.43), and the total freight charges from New York to Fuerstenberg, including relading at Hamburg, would only amount to 10 marks (\$2.38). With such conditions governing transportation on our German inland waterways, the competition of German with foreign grain is rendered almost an impossibility. This injury is, of course, borne by the German agriculturists. Of what value are protective measures and new technical and scientific methods, when the freight rate from Breslau to Fuerstenberg exceeds that from New York to Hamburg?

Similar complaints may be read daily in the journals devoted to the advancement of German agrarian interests,

In the German Reichstag, which will convene within a few days, a strong attempt will again be made to call attention to the necessity of adopting measures for conserving the interests of the German agriculturists.

LOUIS STERN,

BAMBERG, December 4, 1894.

Commercial Agent.

## ITALIAN HARVESTS.

Consul-General Jones, at Rome, under date of December 5, 1894, transmitted the following reports of Italian harvests (approximate) from 1889 to 1893, inclusive

Description.	1889.	1890.	1891.	1892.	1893.
<i>Indian corn.</i>					
Area under cultivation.....acres.....		4,734,110	4,710,299	4,702,886	4,743,190
Mean yield per acre.....bushels.....		16.05	15.39	15.34	17.53
Total yield.....do.....	73,142,687	75,975,151	72,478,382	72,138,455	83,079,783
Importation.....do.....	6,073,167	6,112,677	1,428,587	2,287,811	962,618
Exportation.....do.....	312,027	349,994	464,972	272,170	483,995
Held for sowing.....do.....	2,712,873	2,712,873	2,704,943	2,700,786	2,722,801
Held for consumption.....do.....	76,130,956	79,024,961	70,737,054	71,453,310	80,835,705
<i>Potatoes.</i>					
Area under cultivation.....acres.....		429,724	447,590	479,920	472,344
Mean yield per acre.....bushels.....		44.45	44.00	45.35	48.30
Total yield.....do.....	16,029,500	21,321,681	20,977,417	21,759,803	22,816,078
Importation.....do.....	81,848	207,698	19,866	15,580	22,221
Exportation.....do.....	233,425	224,032	539,788	578,897	316,136
Held for sowing.....do.....	4,935,481	4,935,481	5,140,668	5,311,992	5,623,639
Held for consumption.....do.....	11,042,442	16,369,866	14,326,827	15,884,494	16,898,524
<i>Legumes.</i>					
Total yield.....bushels.....	8,516,994	10,454,738	10,836,096	8,786,482	7,786,308
<i>Rice.</i>					
Area under cultivation.....acres.....		477,132	481,077	488,831	399,272
Mean yield per acre.....bushels.....		37.49	40.92	42.15	34.45
Total yield.....do.....	19,642,317	17,888,178	19,683,216	20,603,977	13,763,999
Importation.....do.....	1,102,046	569,643	988,300	34,015	4,143
Exportation.....do.....	109,703	656,896	283,866	2,251,502	2,356,474
Held for sowing.....do.....	1,643,994	1,643,994	1,657,582	1,684,299	1,375,718
Held for consumption.....do.....	18,990,666	16,136,931	16,730,068	16,702,191	10,035,950
<i>Green fruit.</i>					
Annual production.....number.....	2,787,911,000	3,966,860,000	3,163,350,000	3,139,578,000	3,320,379,000
Do.....tons.....		545,443	434,966	431,697	456,552
Imports: *					
Oranges and lemons.....do.....	298	485	435	219	168
Citron.....do.....	1,146	2,315	1,199	1,749	1,353
Total imports.....do.....	1,438	2,800	1,634	1,968	2,521
Exports: *					
Oranges and lemons.....do.....	213,492	219,333	147,908	183,901	217,057
Citron.....do.....	89	295	775	603	537
Total exports.....do.....	213,581	219,628	148,683	184,509	217,594
Left for consumption.....do.....		228,615	287,917	249,156	241,479

\* Including fruit in brine.

## ECONOMIC REVIVAL IN ITALY.

The Minister of the Italian Treasury, in his recent financial statement before the Italian chambers, lays stress upon the revival of economic activity in production and exchanges within the last ten months in the Kingdom of Italy. The rapid fall in the rate of exchange and the correlative rise of Italian securities during this period, especially on the Paris market, had clearly indicated this condition. The relative ease with which the subsidiary coin has been returned to Italy and the increase in the gold reserve indicate still more clearly the improvement in Italy's credit.

By enforcing the "affidavit," *i. e.*, requiring parties residing outside of Italy who present coupons of Italian rentes for payment to present the corresponding bonds and to take oath that they own the same, the Government has saved 17,000,000 lire (\$3,281,000) gold on the last coupon. If, to these 17,000,000 lire thus left at home, are added 31,000,000 lire (\$5,983,000), the excess of silk exports for the first eight months of 1894, over the silk exports for the corresponding period of 1893, which excess is due to the war between China and Japan, we see an improvement of 48,000,000 lire (\$9,264,000) in the money market in Italy.

The notable and unexpected increase in exportation as compared to lighter importation may possibly have received its first impetus and origin from the rise in exchange which favored Italian exports in a marked degree, but this increase in exports still continues, although exchange is gradually returning to its normal state.

It is not only the quantity, but also the nature of goods exported, that is a hopeful sign for Italy; for, in fact, threads and tissues of cotton, wool, and silk take the lead, indicating an increase and development in national industries.

There has been also a marked increase in the exports of agricultural products.

Italian wines have not as yet found markets to take the place of the French markets closed to them several years ago by the abrogation of the treaty of commerce with France; but the exportation of other agricultural products has largely compensated for this loss.

Olive oil, silk, cattle, poultry, and eggs, and, in a smaller degree, hemp, flax, and jute show a continued increase, as well as vegetables, green and dried fruit, and canned goods.

The exportation of raw silk showed an increase in 1894 of 7,000 quintals (1,540,000 pounds); silk tissues rose from 215,973 kilograms (475,140 pounds) to 299,578 kilograms (659,071 pounds); grain and oats, from 25,763 tons to 49,170 tons; rice, from 26,420 tons to 29,671 tons; flour, from 5,752 quintals (1,265,440 pounds) to 9,149 quintals (2,012,780 pounds.)

During the first ten months of 1893, 15,636 head of cattle were exported against 43,571 head during the corresponding period of 1894, an increase

for the current year of 27,935 head. There was also a notable increase in the exportation of hogs and fresh and smoked meats this year.

Furthermore, 71,706 quintals (15,775,320 pounds) of poultry, a figure never before reached, were exported to Austria, France, and Germany. Eggs were exported to England, Belgium, and Holland to the extent of 284,892 quintals (62,676,240 pounds) as against 135,938 quintals (29,906,360 pounds) in 1890; 156,624 quintals (34,457,280 pounds) in 1891; 163,412 quintals (35,950,640 pounds) in 1892; and 210,927 quintals (46,403,940 pounds) in 1893.

Italian cheese and butter are beginning to find a ready sale in England.

WALLACE S. JONES,

*Consul-General.*

ROME, *December 14, 1894.*

### ADULTERATION OF FOOD IN SAXONY.

The seventeenth report of the Society for the Prevention of Adulteration of Food, which covers the period from October 1, 1893, to September 30, 1894, states that 715 analyses have been made by the chemist of the association, of which 128, or 17.9 per cent, showed objectionable adulterations.

The following table gives the subjects of analysis, with results:

Subject of analysis.	Number of analyses.	Not objected to.	Objected to.
American dried fruits.....	9	1	8
Essential oils.....	1		1
Beer.....	3	3	
Butter.....	52	44	8
Dyestuffs, dyed fibers, textile fabrics.....	8	6	2
Meats.....	2		2
Fruit juices.....	3	1	2
Patent medicines.....	4	3	1
Spices.....	3	1	2
Yeast.....	7	3	4
Cheese.....	2	2	
Coffee.....	2	1	1
Flour and bran.....	28	14	14
Milk.....	309	298	10
Physiological analyses.....	46	15	31
Soap, hides, oils, alkalis.....	100	86	14
Technical products.....	100	88	12
Water.....	32	18	14
Wine.....	5	3	2
Total.....	715	587	128

The American dried fruits had a nice white color, but as they were dried on zinc plates they contained the injurious substances of this metal. While in former years they were freely admitted to the market, their sale has been prohibited during the past year.

Oil of citron contained of this oil only a small percentage, the balance being other ingredients and alcohol.

Butter, particularly that from Austrian dealers, contained cocoanut oil, sesame oil, tallow, cotton-seed oil, etc.

Textile fabrics were dyed with poisonous colors, and wool stuffs showed cotton admixtures up to 85 per cent.

The spices with which meats had been prepared contained tannin; sausages contained living parasites.

Fruit juices were colored with chemicals. A sample of coffee was discovered to be impregnated with animal urine.

Rye flour was adulterated with rice flour, and buckwheat flour with starch. Bran was a composition of wheat bran, rye bran, sand, dust, mites, and mite eggs.

The good showing which milk makes is due to the supervision of the dairies by the association.

Olive oil was found to be nothing but rape-seed oil, perfumed with rosemary oil. So well was the adulteration made that even well experienced merchants could not detect it.

What was sold as the Rhenish wine, "Liebfraumilch," proved to be as sour as vinegar. The sweet Tokay wine was adulterated with large additions of sugar.

THEODORE M. STEPHAN,

*Consul.*

ANNABERG, *December 10, 1894.*

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## CATTLE IMPORTS INTO SWITZERLAND.

Swiss customs statistics show that for the three quarters ending September 30, 1894, 52,399 head of beef cattle, valued at 26,409,000 francs (\$5,096,937) were brought in over the frontier. This shows an increase of over 18,000,000 francs (\$3,474,000) and of 12,000,000 francs (\$2,316,000) in excess of the same periods of 1893 and 1892, respectively. Of this year's importation, Italy furnished 29,000 head; Austria-Hungary, 16,600 head; other countries, 6,799 head. Of this enormous amount, I note with regret that the United States furnished only 226 head, which came by way of a trial shipment via Genoa, and it strikes me that, with a little exertion on the part of our cattle men, they might have secured a good portion of this business.

In addition to the above, 6,412 bulls, worth 3,300,000 francs (\$616,900), and 5,700 cows, worth about 2,500,000 francs (\$482,500) for breeding purposes were imported, being brought in mostly from France and Germany; 63,000 head of hogs, worth 3,500,000 francs (\$675,500), as well as a large number of other animals were brought in to help replenish stocks so much reduced in consequence of the severe drought of 1893.

The same statistics show that for the first nine months of this year the excess in the value of these imports, as compared with the imports of the same periods of 1893, is over 25,000,000 francs (\$4,825,000), and it is expected that by December 31 these figures will show a still larger increase.

EUGENE GERMAIN,

*Consul.*

ZURICH, *December 7, 1894.*

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### DAIRY FARMING IN CANADA.

Dairy farming is one of the leading industries in Canada. In 1893, the exports of cheese alone brought into the country \$13,400,000. During the season of 1894, the value of the exports of cheese will exceed this greatly. There were shipped from Montreal 1,726,058 boxes of cheese, an increase of 43,112 over the season of 1893. The prices paid have averaged as high as during past seasons, being sufficient to leave a handsome profit to the farmer, and to make dairying the most profitable branch of agriculture.

L. M. SHAFFER,

*Consul.*

STRATFORD, *December 31, 1894.*

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### SHIPBUILDING IN GREAT BRITAIN.

From an article recently published, I am enabled to send the following information in regard to shipbuilding in Great Britain during the year 1894:

Contrary to all the expectations formed twelve months ago regarding the prospects of the industry, the production has been much higher than it was in 1893. When the year began, the outlook seemed the reverse of encouraging. Most of the yards were in a depleted condition, while the orders for new work were few and far between. In the spring, however, a revival took place, and although this did not continue for any great length of time, it sufficed to give that impetus to the trade which has left such a decided mark on the output. The shipbuilding operations of 1893 were about the lowest on record. The total output of the United Kingdom, including war ships built in the Government and private establishments, amounted to 917,000 tons. This was a decrease from 1892 of nearly 400,000 tons, and from 1891 of nearly 700,000 tons. As a matter of fact, the shipbuilding facilities of the country were utilized to the extent of barely two-thirds in 1893. During the present year, the output has been 1,124,000 tons, or an increase over 1893 of 107,000 tons. Last year, 205 sailing ships, with a tonnage of 132,826, were built, and this year the number has fallen to 176, representing a tonnage of 93,249, while the number of steamers has risen from 504 to 611, and the tonnage from 784,250 to 1,030,759. In view of the fact that every "ton" of steamer is reckoned

equivalent to three sailing-ship "tons," it will be seen that the carrying capacity has been largely augmented in excess of the increase of tonnage.

The following table gives in detail the tonnage built in the different centers:

Shipbuilding centers.	1894.				Total tonnage.	Total tonnage in 1893
	Sailing vessels.		Steamers.			
	No.	Tons.	No.	Tons.		
Clyde .....	75	72,130	182	368,755	340,885	280,160
Forth .....	2	522	27	14,840	15,362	13,492
Tay .....	14	4,384	16	7,006	11,390	6,811
Dee .....	2	490	10	6,439	6,929	2,427
Dockyards .....			8	26,700	26,700	31,640
Tyne .....	9	3,197	110	204,071	207,268	147,449
Wear .....			70	166,544	166,544	124,161
Tees .....	18	1,644	41	100,618	102,262	95,115
Hartlepool .....			29	79,193	79,193	66,641
Humber .....	14	1,919	53	17,633	19,552	9,139
Mersey .....	6	3,506	10	4,950	8,456	9,071
Thames .....		800		6,403	7,203	8,235
Barrow .....			10	20,656	20,656	19,552
English minor ports .....	36	4,657	22	9,050	13,707	15,927
Belfast .....			23	97,901	97,901	87,256
Total .....	176	93,249	611	1,030,759	1,124,008	917,076

JOHN M. SAVAGE,  
Consul.

DUNDEE, December 18, 1894.

## TOBACCO DUTY IN PERU.

I send herewith a supreme decree, with translation, issued by President Caceres, in regard to the import duty on tobacco, which goes into effect January 1, 1895.

J. A. MCKENZIE,  
Minister.

LIMA, November 16, 1894.

[Translation.]

### LAW INCREASING THE DUTY ON TOBACCO.

ARTICLE I. The import duties on tobacco in the leaf, and in other forms and on cigars and cigarettes introduced into the territory of the Republic shall, from the 1st of January, 1895, be fixed and collected in the customs-houses in accordance with the following tariff:

(a) All kinds of tobacco from Central and South America.....	per kilogram..	\$0.50
(b) All kinds of tobacco from countries bordering on the Republic.....	do...	.40
(c) All kinds of tobacco from Havana and other countries.....	do...	1.00
(d) Cigars made of Havana tobacco (net weight).....	do...	7.00
(e) Cigars made of tobacco from other countries.....	do...	3.50

- (f) Cigarettes made of Havana tobacco in packages containing not over 24 cigarettes.....per 1,000 packages.. \$100.00  
 (g) Cigarettes made of tobacco from other countries.....do... 50.00

ART. 2. The duty on tobacco grown in the country, on cigars and cigarettes imported from abroad and on those in the country, also on chewing tobacco, snuff, cut and fibred tobacco for smoking shall be collected as per following scale:

- (h) Tobacco grown in the country.....per kilogram.. \$0.25  
 (i) Foreign tobacco for chewing, snuff, cut, and fibred tobacco, ready for use...do... 1.50  
 (j) Tobacco from countries bordering on the Republic and from other parts....do... 1.00  
 (k) Havana tobacco in leaf for manufacturing purposes.....do... 1.00  
 (l) Pure tobacco leaf cigars, whether boxed or loose, from whatever foreign ports imported (net weight).....do... 1.80  
 (m) Pure tobacco leaf cigars manufactured in the country (net weight).....do... 1.50  
 (n) Cigarettes in packages, whether tied in bundles or loose, when made of Havana tobacco, shall pay for each package not exceeding 24 cigarettes..... .05  
 (o) Cigarettes in packages manufactured of Havana tobacco in the country..... .04  
 (p) Cigarettes in packages manufactured of other tobaccos..... .02

ART. 3. The existing stock of tobacco, and pure leaf tobacco cigars and cigarettes, as likewise of imported cut tobacco on hand in the manufactories or warehouses, shall pay the excess of duty as established by the preceding article.

ART. 4. The Government will put for sale at public auction, for the term of two years at a time, in the capital of the Republic and in the presence of the board of auctioneers, the duty on the consumption of tobacco.

ART. 5. The Executive will fix the means and regulations necessary and best calculated to render this law effective, and will determine the dates to which those who attempt to elude paying the duties established will become liable.

ART. 6. All duties and treasury imposts on tobacco, cigars, and cigarettes existing hitherto are hereby abolished, the only ones remaining in force being those now fixed.

ART. 7. When cigars or cigarettes manufactured for consumption in the country are exported, the treasury and duty contractors shall return to the exportee 50 per cent of the duty paid by him, respectively, after the giving of proofs that the exportation to a foreign country is genuine. In the case of reimportation, the full duties imposed shall be paid, the same as if the cigars or cigarettes were of foreign manufacture.

ART. 8. The laws (acts) of the 4th of November, 1886, of the 18th of November, 1892, and of the 29th of September, 1893, are hereby abolished.

## PAYMENT OF DEBTS IN GREECE.

I inclose herewith a report concerning a decision recently rendered by the Areopagus of Athens.

GEORGE HORTON,  
*Consul.*

ATHENS, *December 31, 1894.*

### REPORT OF A RECENT DECISION OF THE SUPREME COURT OF GREECE.

In the year 1885, Victor Olivier, a native of Belgium, deposited with the Bank of Industrial Credit of Greece 11,000 francs (gold). The paper money of Greece (national bank notes) was then at or about par with gold. In 1887, Mr. Olivier drew on the bank for the sum deposited, and was tendered national bank notes to the amount of 11,000 drachmas, a



sum less in value by 3,025 drachmas than the amount deposited, the drachma in paper having, in the meantime, become a depreciated currency. He refused to accept the sum offered, and brought suit against the bank before the court of the first instance of Athens. This tribunal found for Olivier, ordering that the 3,025 drachmas, with interest thereon for the time during which the said sum had remained unpaid, be paid to Olivier.

The bank, thereupon, carried the matter before the court of appeals, which tribunal sustained the decision of the court of first instance. The bank then finally resorted to the Areopagus, or supreme court of Greece, which has reversed the two preceding decisions, finding for the plaintiff. Olivier is therefore finally compelled to accept the 11,000 drachmas in paper, and to pay the costs of the trial.

The decision of the Areopagus is based in effect upon the law numbered "A L O G," of 1885, which says that "bank notes will circulate compulsorily as lawful currency at their nominal value within the State, without consideration for any previous agreement to the contrary."

Since Olivier began his suit, the value of the drachma has continued to fall, and at the present time the 11,000 drachmas offered by the bank are worth but little more than half the 11,000 francs gold deposited.

This decision has excited much discussion in the mercantile and financial world here, and has engendered a feeling of distrust among merchants doing business with Greece and shipping goods to this country. There are those who hold that a contract made in terms of pounds, marks, or dollars must be fulfilled in the kind and amount of money specified, and others who claim that payment could be tendered in the equivalent number of drachmas, reckoning the drachma at par. Still others maintain that quibbling could only arise as between francs and drachmas, the latter word being understood as the Greek translation of the former. The rate fixed for the pound sterling is 25.15 drachmas, and for the gold Napoleon 22.40 drachmas, whereas to-day the pound of England is worth 47.50 drachmas, and the Napoleon of France 37.50 drachmas.

It would certainly appear as though the merchant shipping goods to Greece ran the risk of being tendered depreciated currency—that is, if the buyer cared to avail himself of the law of 1885, as expounded and applied by the Areopagus.

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## BERLIN INDUSTRIAL EXHIBITION—1896.

Berlin is to hold an exhibition during the spring and summer of 1896 in honor of the city's advance as an industrial and manufacturing center. When first mooted, this exhibition was to have had a very broad international character, but other exhibitions, notably the projected world's fair at Paris for 1900, caused the abandonment of that intention.

It is to be mainly an exhibition of the products of Berlin workshops, industries, and fine arts, but will not exclude articles made in Germany if they are sold in Berlin or have some other local relationship. The presence in Berlin of an agency or shop for the sale of such articles entitles the German who is not in Berlin to exhibit.

Notwithstanding these limitations, there is said to be a way for foreign exhibitors to participate, namely, on the same grounds as Germans not of Berlin, by showing that they have an agency or representative in the city. I have taken steps to obtain, if possible, some written statement from the proper authorities which shall serve as sufficient guaranty for American firms

to avail themselves of this exception to the rule. Meantime, I have the honor to notify the Department of the present state and prospects of the exhibition so far as they may seem to touch American interests.

I may observe that products of American workshops have, in certain cases, served to win medals and diplomas for German manufacturers and workshops, in this wise: For example (if I can believe the statements of those who imported them), carriages have been honored with prizes in German exhibitions, and their ostensible makers have received diplomas and medals, when the vehicles themselves were made in the United States, imported in separate pieces, and merely lacquered and finished in German carriage shops.

Some of our manufacturers who have reason to know of or suspect such practices may think it worth some outlay of time and money to inform Germany of the true origin of such wares by moving early to establish agencies in Berlin, thus qualifying themselves to participate in the exhibition. But without regard to the question of appropriated designs, it might be wise to secure the presence of leading furniture shops, boot and shoe factories, and even machine shops.

The exhibition is to be held at Treptow Park, on the upper reaches of the Spree, in the eastern part of the city. The municipality has already granted extensive privileges to several electric surface car lines and one elevated line in order to place the center and west of the city in easy communication with the grounds. These contain some fine sites on the banks of the Spree, in a rather flat country, well out from the more closely built part of the town. Great preparations have been made in the way of new bridges over canals and branches of the Spree.

As the eastern is the manufacturing end of the city, it is hoped that the exhibition will prove a surprise, even to Berliners, by its extent and by the variety of its manufactured contents, and give them a new idea of the east end of the town.

Berlin, as a city, is of comparatively recent origin. Its increase in size and population within the last quarter of a century is only rivaled by the growth of American centers like Chicago. There is an intense eagerness here to make it not only the imperial capital where the Court of the German Emperor, the Bundesrath, and the Reichstag come together, but the leading industrial center of the Empire. Indeed, the managers of the coming exhibition boast that, in 1896, it will be shown that such is already the case—that Berlin surpasses Munich, Frankfort, Hamburg, Bremen, and other large cities of Germany in the extent and variety of its manufactures.

Be that as it may, there is no city in the Empire where American goods are more certain to find buyers, where prejudice against things of foreign make is less to be feared, and where exhibitors and exhibits are surer of just and careful treatment.

Berlin is not a cheap place of residence, and quick freights to Berlin on railways are high. Nor must exhibitors expect quick delivery of goods, or

speed in artisans employed to fit up booths, shops, or exhibition buildings. The motto here is "Immer langsam voran" (always "go slow"). But the slow freights are not costly, especially by water carriage from Hamburg and Bremen.

The main contention of the managers of this exhibition, whereby they seek to limit the scope of exhibits and lessen the number of exhibitors, is the rule that articles shown shall have been made in Germany. American firms who are especially desirous of participating can, therefore, avail themselves of this. By establishing an agency and satisfying the managers of the exhibition that their wares were made in Germany, they can enter into competition with German firms.

CHARLES DE KAY,  
*Consul-General.*

BERLIN, *January 2, 1895.*

## AGRICULTURAL IMPLEMENTS EXHIBITION.

The Imperial Society of Agriculture in Vienna has decided to hold an international exhibition of agricultural implements and machinery at Vienna from the 4th to the 7th of May, 1895. It is especially in agricultural machinery that it is possible for the United States to do a larger business with Austria, and although the exposition, or, more properly speaking, the fair, is only to be open for a short space of time, it offers an opportunity to American manufacturers of farming implements and machines to exhibit their goods and to send them to Austria at reduced rates.

If the Department desires to call the attention of business men to this exhibition, it would be well to do so as soon as possible, as exhibits are only accepted to the 30th of April.\*

This consulate-general received yesterday a printed statement from the committee of direction, in which the scope of the exhibition and the regulations relating thereto are given, and I forward herewith a translation of the same.

There will be ten different departments in the exhibition, namely:

(1) *Agricultural department.*—Implements and machines for preparing the soil, sowing, harvesting, thrashing, and seed cleaning; methods of transport, field roads, etc.; power for agricultural machines (motors, etc.), cultivation of fields, preparation of hay, and preserving fodder.

(2) *Agricultural industries.*—Machines and implements for brewing, refining, and manufacturing malt, sugar, vinegar, and starch.

(3) *Forestry.*—Machines and implements for gathering seeds, preparing the soil, nurseries, woodcutting, and transportation in forests.

(4) *Industries relating to forestry.*—Machines and implements for sawing and for paper manufacturing.

\*NOTE BY THE DEPARTMENT.—This report was given to the newspaper press immediately upon its receipt.

(5) *Fruit and cultivation of wine.*—Utensils for fruit and wine culture and filtration.

(6) *Utensils and machines for cattle.*—Machines for preparing fodder, stable implements, etc.

(7) Dairy implements and machines.

(8) *Fisheries.*—Artificial breeding of fish.

(9) Veterinary.

(10) Uses of electricity in agriculture and forestry, and the industries relating thereto. (Annex, seeds and artificial fertilizers.)

#### GENERAL REGULATIONS.

The fair opens on the 4th and closes on the 7th of May. Exhibits have to be announced by the 15th of March to the committee of the International Maschinenmarkt, I Herrengasse 13, Vienna.

For one meter of space out of doors, there is a charge of 20 cents; for one meter of space in doors, 80 cents; machinery and implements for transportation in forests and fields, 10 cents a square meter.

The disposition of the exhibits will be in accordance with the decisions of the committee. With the permission of the committee, exhibitors may erect pavilions.

Owners are obliged to furnish the necessary power for machines.

Reliable forwarding agents will be recommended, and the reduction in freight rates will be communicated on application to the committee. Exhibits are accepted from the 22d to the 30th of April.

By the 3d of May all exhibits must be unpacked and in their proper places, and any painting that has been done must be dry. Steam machines, for whose erection foundations have to be dug, are only accepted when the exhibitors agree to remove the said foundations during the first week after the exhibition.

Exhibits may be sold during the exposition, but may not be removed until its close. Duty will be returned on goods that are not sold.

After the close of the exhibition, the exhibits must be removed before the 14th of May.

The firm of Schenker & Co. may be recommended as forwarding agents, and are in position to give any information required.

MAX JUDD,  
*Consul-General.*

VIENNA, *January 19, 1895.*

#### HAWAIIAN STATISTICS.

Under date of November 21, 1894, Consul-General Ellis Mills, of Honolulu, transmitted to the Department a copy of the November number of the Planters' Monthly, from which the following statistics have been copied:

*Labor.*—Of the regular Japanese contract laborers, there arrived in the Hawaiian Islands from October 23, 1893, to June 27, 1894, the twenty-

sixth lot, 1,190 men, and 296 women, who were distributed to the different plantations. Other steerage passengers arrived during the same period as follows, many of them having gone to work on the plantations:

Nationality.	Arrivals.			Departures.		
	Men.	Women.	Total.	Men.	Women.	Total.
Japanese.....	2,419	604	3,023	1,893	418	2,311
Chinese.....	836	95	931	1,030	58	1,088
Portuguese.....	54	20	74	117	66	183
Total.....	3,309	719	4,028	3,040	542	3,582

The following figures show the number and nationalities of the laborers on the sugar plantations:

Nationality.	Male.			Women.	Children.	Grand Total.
	Contract.	Other.	Total.			
Hawaiian .....	704	798	1,502	27	2	1,531
Portuguese.....	220	1,483	1,703	166	270	2,139
Chinese.....	147	2,099	2,246	16	.....	2,262
Japanese.....	7,468	3,608	11,076	1,053	.....	12,129
Others.....	95	304	399	26	9	434
Total.....	8,634	8,292	16,926	1,288	281	18,495

*Sugar.*—The sugar statistics for the season of 1893–94 are given as follows: Cane used, 200,581,345 pounds; net sucrose obtained, 25,336,625 pounds; sucrose in cane, 31,290,690 pounds (15.60 per cent); loss of sucrose in extraction, 1,458,227 pounds; and in manufacture, 4,495,838 pounds, being a total loss of sucrose of 5,954,065 pounds, or 2.97 per cent of cane, or 19.03 per cent of sucrose.

## BRITISH TRADE WITH THE HAWAIIAN ISLANDS.

The inclosed statement showing merchandise imported by the steamers of the Vancouver, Canadian, and Australian line for the nine months ending September 30, will give some idea of how this line is encroaching on the business heretofore enjoyed by the long established lines of American steamers, and is also opening up an English source of supply for the Hawaiian market, which has heretofore been exclusively American, so far as this particular line of goods is concerned.

It will be observed that most of the items mentioned in the statement are those which form staple articles of export from California, and it is this class of merchandise on which the American line of vessels plying between these islands and San Francisco rely for their freighting business.

It is noticeable that the quantity of freight which the Canadian steamers bring is steadily increasing, much of it being brought on ship's account, and what those vessels may lose in the way of freight when the goods are sold is more than made up by the large subsidies which they receive from the British Government.

*Quantities of merchandise imported into Honolulu by the Vancouver and Canadian-Australian Steamship Company for nine months ending September 30, 1894.*

Articles.	Quantity.	Articles.	Quantity.
Lime.....barrels.....	8,160	Overland freight (merchandise and machinery).....packages.....	1,014
Flour (20,000 quarter and half sacks).....do.....	*6,000	Bran (15,000 bags).....tons.....	*525
Shooks.....bundles.....	6,000	Weddings (5,000 bags).....do.....	*260
Whisky.....cases.....	150	Barley:	
Fish.....barrels.....	767	Rolled (15,500 bags).....do.....	*250
Posts.....	2,700	Whole (1,200 bags).....do.....	*60
Shingles.....bundles.....	592	Oats (4,000 bags).....do.....	*250
Lumber.....pieces.....	4,771	Wheat (3,000 bags).....do.....	*200
Bags.....bales.....	354	Chopped mill feed (1,500 bags).....do.....	*75
Beer.....cases and barrels.....	165		
Naval stores.....packages.....	600		

\* Estimated.

Various quantities of small and assorted merchandise were also imported.

ELLIS MILLS,  
*Consul-General.*

HONOLULU, *December 26, 1894.*

## CHANGES IN THE SWEDISH TARIFF.\*

By a royal ordinance the import duty in Sweden has been raised on breadstuffs and malt to the following rates per 100 kilograms (220.46 pounds):

Description.	Old rate.	New rate.
	<i>Kronor.</i>	<i>Kronor.</i>
Rye, wheat, barley, maize, pease, beans, and other kinds not specially provided for.....	1.25	3.15
Malt.....	2.50	4.00
Flour and groats, all kinds.....	2.50	6.50
		<i>\$0.844</i>
		<i>1.072</i>
		<i>1.742</i>

It is possible that these new tariff rates, which took effect on the 7th instant, may be reduced somewhat in the near future, but this can not be said with certainty, for it depends mainly upon how the Diet at the next assembly decides in the matter.

OTTO H. BOYESEN,  
*Consul.*

GOTHENBERG, *January 9, 1895.*

\* Similar information was transmitted by Consul O'Neil, of Stockholm, January 9, 1895.

## NEW TARIFF OF BRITISH HONDURAS.

I inclose herewith a copy of the new tariff of British Honduras.

JAMES LEITCH,  
Consul.

BELIZE, *January 20, 1895.*

*Tariff of duties of customs and excise and other dues.*

SCHEDULE A.

*Customs duties.*

Beer, porter, cider, and perry.....	per gallon...	\$0.25
Candles:		
Tallow.....	per pound...	.01
All other.....	do.....	.02
Cigars.....	per 1,000...	6.00
Cigarettes.....	do.....	.75
Cocoa.....	per pound...	.03
Coffee.....	do.....	.02
Gunpowder.....	do.....	.05
Hay and oats.....	per 100 pounds...	.10
Lard.....	per pound...	.01
Lumber:		
Rough, except palings.....	per 1,000 feet...	1.00
Dressed, except palings.....	do.....	1.50
Oils:		
Mineral, of 150° test and upwards.....	per gallon...	.03
Below 150° test.....	do.....	.06
Other, not in bottles.....	do.....	.06
Opium.....	per pound...	2.00
Revolvers.....	each...	3.00
Rifles.....	do.....	1.75
Soap.....	per 100 pounds...	.25
Spirits not methylated, cordials and liqueurs not exceeding the strength of proof by Sikes's hydrometer, and in proportion for any greater strength than strength of proof.....	per gallon...	2.50
Sugar:		
Unrefined.....	per pound...	.01 ½
Refined.....	do.....	.02
Tea.....	do.....	.05
Tobacco:		
Leaf.....	do.....	.08
Other than leaf.....	do.....	.50
Wines:		
Sparkling.....	per gallon...	1.50
Still, except claret.....	do.....	1.00
Claret.....	do.....	.50

All other goods, not free of duty, and not otherwise charged with any duty, according to the invoice or assessed value, including the cost of the packages, to per cent.

## SCHEDULE B.

*Goods free of duty.*

Agricultural implements.	Meat, fresh (not preserved in any way).
Animals, living.	Palings for fences.
Beef and pork, heretofore paying rated duty.	Passengers' luggage (containing apparel and articles of personal use, and professional apparatus).
Books, printed, not being account.	Patterns and samples of no salable value.
Bread, navy and pilot.	Pitch and tar.
Bricks, roofing slates, and tiles.	Plants, seeds, bulbs, and roots.
Bullion and coin.	Plant or materials for railways, tramways, electric lighting, telegraphs, or telephones.
Cane bills, cane knives, and hoes.	Poultry and other live birds.
Cement and lime.	Pumps and other apparatus for raising water.
Church decorations and vestments imported specially for any church.	Rice.
Cocoanuts.	Rubber, unmanufactured.
Coal and coke.	Salt (other than table salt).
Drain pipes.	School appliances imported specially by the manager of any school.
Firewood.	Shooks, staves, heads, and hoops for casks and rum casks.
Fish, salted, dry, or wet.	Stones, sand, gravel, and soil.
Flour.	Tanks or vats.
Fresh fish and oysters (not preserved in any way).	Timber, logwood and other dyewoods, being indigenous to the colony.
Fresh fruit.	Tombstones and memorial tablets.
Furniture and household effects of bona fide immigrants.	Tortoise shell (unmanufactured).
Hides and skins, raw.	Trucks for use in mahogany works, including the axles, ironwork, and chains forming part thereof.
Ice.	Turtle, live.
Indian corn.	Uniforms and appointments imported by civil officers.
Iron fencing and galvanized iron netting (including staples and railings).	Vegetables, fresh.
Iron framework and girders (for iron buildings).	Vessels.
Iron roofing, water heads, brackets, down-pipes, guttering, ridging, and screws.	
Machinery, agricultural, marine, and manufacturing.	
Maps and charts.	

*Excise duty.*

Spirits, manufactured in the colony, not exceeding the strength of proof by Sikes's hydrometer, and in proportion for any greater strength than strength of proof, per gallon, \$1.25.

*Storage of gunpowder.*

On each barrel of 100 pounds, per month or part of a month, 25 cents; each smaller package in proportion.

*Warehouse rent on all goods lodged in the Queen's warehouse, per month or any part of a month, so long as the goods remain in the warehouse.*

For every puncheon, pipe, butt, or tierce.....	\$0.50
For every hogshead or half tierce.....	.25
For every quarter cask.....	.15
For every octave.....	.10
For every barrel.....	.10



For every half barrel.....	\$0.05
For every demijohn.....	.05
For all packages measuring less than 1 ½ cubic feet.....	.02
Measuring 1 ½ and less than 2 ½ cubic feet.....	.03
Measuring 2 ½ and less than 5 cubic feet.....	.05
Measuring 5 and less than 10 cubic feet.....	.10
Measuring 10 and less than 20 cubic feet.....	.15
Measuring 20 and less than 30 cubic feet.....	.50
Measuring 30 and upwards.....	1.00

*Port charges—light dues.*

On all vessels of 5 tons and upwards, entering from seaward...per registered ton...	\$0.12 ½
Maximum charge to be levied on any one ship (rule made December 5, 1894).....	125.00

## NEW CURRENCY SYSTEM IN COLOMBIA.

Law 70 of 1894, passed by the Colombian Congress on the 21st of November last, in relation to the liquidation of the National Bank and the redemption of the paper currency, is hereby inclosed, with a translation thereof.

This law is a radical departure from the financial policy of the Colombian Government for several years past. No other money than paper has been recognized by the Government, and no contract could be made binding in either silver or gold. In other words, a contract made payable in silver or gold could not be collected in the courts, but a judgment would be issued for the number of dollars mentioned in the contract only in paper. It will be seen by the present law that it is the purpose only at first to redeem the fractional currency in circulation; then, as fast as may be, to redeem the larger currency until they shall have reached a full silver basis.

Law 88 of 1886 may need explanation. This law allowed the General Government to add 25 per cent to all duties collected in the custom-houses and apply this addition to the repairs of the public highways. Two-fifths of this is now to be applied to the redemption of the paper currency. This 25 per cent additional customs duties has not been sufficient, as it has been used to keep the roads in good condition, and it is believed the diverting of any part of this fund from its original purpose will cause great dissatisfaction among the people.

Article 11, which refers to the free coinage of gold, it is believed, will not cause any gold to be coined; first, because there is no gold in the country for the purpose, the gold produced in the country being almost wholly in the hands of English capitalists, and as fast as the mines produce it, it is shipped to Europe for coinage; secondly, the Government mints have been neglected for many years, and the appliances for coining are not in such a condition as to make coinage profitable.

For some years, the Government has had in the vaults of the National Bank \$2,300,000 of silver, 0.835 fine, which has been held for the redemp-

tion of certain paper currency. The last Congress authorized the President of the Republic to use this silver for such purposes as he might think best for the interests of the Republic. Instead of applying this silver to the redemption of that amount of paper money, and thus at once putting this amount of silver in circulation, he has sold the silver in Panama at a premium of about \$1.20, and is applying the money to the payment of the army and other public purposes.

It is hoped that the present law may result in a better financial condition for the Republic, but the change will be necessarily slow, and will not be felt for some time to come.

\* \* \* \* \*

LUTHER F. MCKINNEY,

*Minister.*

BOGOTÁ, December 13, 1894.

#### SYNOPSIS OF CURRENCY LAW OF 1894.

The law of November 21, 1894\* provides that the affairs of the National Bank shall be liquidated and the bank reduced to a section of the Treasury Department. The Government is to proceed immediately "to dictate the necessary arrangements" for the discounting of the 6,000,000 francs remaining free of the sum which the Panama Canal Company is to deliver to the Republic. "After the initial discount, the sum which remains free shall be employed in the purchase of silver bars, which shall be coined in Europe in 10 and 20 cent pieces at 0.835 fine, in accordance with the rules of the fiscal code touching this matter. As soon as the 10 and 20 cent pieces mentioned in the foregoing article shall have been received \* \* \* they shall be exchanged at par for paper 10 and 20 cent pieces, which shall be burned." The following amounts are "to be destined for the redemption of the paper money: (1) Two-fifths of the 25 per cent of the additional importation dues granted to the Departments by law 88 of 1886; (2) the net amount of the value of the bills held by the National Bank, which shall be immediately collected; (3) the profits which the Government may obtain in exchange for the privilege granted to organized banks or banks which may be organized for the issue of bank notes in accordance with article 16 of this law; (4) the amounts which, by any cause, may belong to the Nation by reason of its contracts with the Panama Railroad and Canal companies"

It is provided that of the two-fifths of the custom-house dues previously mentioned, one-half shall be used for the coinage "of fractional silver currency at 0.835 fine in pieces of 10, 20, and 50 cents, until the sum of \$5,000,000 has been completed, including in this sum the amount ordered to be coined by article 3 of this law." The other half is to be used "for the monthly burning of the paper money. As soon as the \$5,000,000 are coined, the said funds shall continue to be used for the redemption of the paper money."

The free coinage of gold in the national mints in pieces of 16 grams, 120 milligrams, 0.900 fine, is authorized, the said pieces to be called "condor," which shall have a legal value of \$10, as well as pieces of \$5, called "half condors;" of \$2, called "one-fifth of a condor;" and of \$1.

The Government reserves the right to allow private parties to coin in the mints silver bars produced in the country, in pieces of a value of \$1, 0.900 fine, provided they fulfill the conditions prescribed by the fiscal code.

\* Printed copy and translation filed in Department of State.

From the date of the sanction of the new law, the exportation of fractional currency is prohibited. Private parties are also prohibited from introducing any other money except gold at 0.900 fine.

The power to issue new bills, the law declares, belongs exclusively to the nation, and the Government shall not be allowed to take away or transfer this right until paper money is on a par with silver. The capital of a bank desiring to exercise this privilege must be not less than \$250,000 in legal silver or gold money. No bills may be issued except for a sum of double the amount of metal in the safe. The privilege may not be granted for a longer period than seven years, but it may be renewed. The bank is subject to inspection, and must pay annually to the National Treasury 2 per cent of the amount of bills issued.

Aside from the cases mentioned in article 121 of the Constitution, the issue of paper money is absolutely prohibited.

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## BRADFORD TRADE WITH THE UNITED STATES IN 1894.

I submit herewith, for the benefit of those interested in the textile industries and in trade between the United States and Bradford, extracts from the Bradford Trade Annual Review for 1894. This review is published on December 31 of each year by the Bradford Daily Observer. Its several features are written by experts, and this annual analysis of the various departments of Bradford commerce are much esteemed in this consular district and carefully kept for reference.

In the general introductory summing up of the situation, the editor says:

When writing our review of the trade of 1893, we took occasion to observe that two features stood out prominently as likely to determine the future course of the trade—the commercial panic in America, which had paralyzed not only our trade with America but trade in America, and the disastrous coal war at home. The former was bound to render the recovery of the United States a slow process, and the latter, in conjunction with the depression in agriculture, made it impossible to expect a good home trade. We further pointed out that although the American manufacturers would no doubt get free wool, their own domestic supplies were so ample, and had become so cheap by reason of the commercial disasters of the year, that it was by no means certain that they would be purchasers in our market for some time to come. All these forecasts have been fully justified by the event. And yet, if we go back to the earlier months of the year now under review, what do we find? There was at the start a general expectation that the tariff measure would become the law by March; then, as the discussion dragged on, the date was put at the end of June. All this time business was surely but slowly getting worse, but men's thoughts being occupied by the tariff struggle, they not unnaturally laid the whole blame there, and they persuaded themselves that once the tariff bogey was out of the way, either by the Wilson bill being passed or being knocked on the head—men said it did not matter which—the wheels would immediately revolve freely and business would greatly improve. The year's clip of home-grown wool was bought in this belief, and although the hope was so long deferred that the whole heart was well-nigh sick, when the bill did finally and unexpectedly pass the Senate, there was immediately an appreciable recovery in the market. But this was purely anticipatory, and the fall in prices in the three months since that moment has been more sharp and serious than in the nine months previously. The Americans did not rush into this market for wool; they did not crowd the sale room in London; they did not at once place any very heavy orders in the hands of Bradford manufacturers. That which everybody expected and had prepared for did not take place; the unexpected fall in prices which did was the inevitable sequence.

What, then, is the outlook for the year just about to open? So far as we can see at present, it is not very encouraging. The past eighteen months have been so quiet, both with our own manufacturers and their competitors on the Continent, that the consumption of wool must have been reduced, while the world's supply has increased. There must be an accumulation available, which will take some time to work off. Therefore, except in the case of some sorts of limited production, there does not seem to be room for any marked rise in the value of raw material. Then, although we may anticipate that the new American tariff will prove to be somewhat more favorable to us than the old one, the difference, taking free wool into account, is not great; and in any case, the protection to the American manufacturer still remains very great. For four months, moreover, he has been straining every nerve to make hay while the sun shines, and when, to-morrow, the Bradford goods are taken out of bond under the new duties they will be placed on a market, the hunger of which has no doubt to a large extent been appeased by the productions of American looms. Then, the agricultural depression is much more acute than it was a year ago in all our corn-growing countries, and it must be remembered that agriculture is still our principal industry. Moreover, the extraordinary prices for wheat which are now ruling, affect equally the farmer in the United States, the settler in Manitoba, and the peasant in continental Europe. Thus, it may well be that we may have flat markets in the early part of the year. But, on the other hand, there are causes which are making for improvement in the world's trade. Against all the adverse influences must be set these facts: that Europe is in a state of peace more profound than has been known since 1870, the Armenian question being scarcely likely to cause trouble; that the United States and the Australian colonies, who are almost our most important customers, are surely recovering from their embarrassments; that the Argentine liquidation is about being worked out; that employment throughout the industrial community is apparently improving, and if wages are nominally low, their purchasing power is high. If the United States Congress can bring itself, as a patriotic duty, to honestly face the task of placing the currency of the United States on a sound footing, the recovery of confidence in American securities will be rapid, and vast stores of idle capital will be released with results that can not fail to benefit the whole civilized world.

#### WOOL.

Under this head a specialist writes:

At this moment the price of every class of wool is lower than it was a year ago. There has been a considerable increase in the imports and a diminution of exports, and consequently, a larger amount left to be dealt with by the home trade. In addition to this, prices are unsteady and are poorly supported by genuine consumptive demand. To take the course of the English wool market by way of illustration, the first six months of the year are marked by no feature of interest to enliven the continual dullness which dragged its weary length along. There was hardly a time when prices could be said to be distinctly a farthing lower than they were the week before; yet there was a point in June when they were a half penny lower than January. All through that period, the holders of wool were buoyed up by the hope of a settlement of the American tariff question, and held on to their stocks with a grim tenacity which, when it occasionally verged on despair, resulted in some business at a shade less money, and immediately filled up the vacancy in consumers' stocks. When the clip came upon the market, dealers did not like to let their clips go by in the face of an improvement which might take place when the tariff was settled; and notwithstanding a very small demand for the home trade, and none whatever for export, they proceeded to fill their warehouses at prices marking one-fourth to one-half penny advance upon those current the month before. Later on, the tariff became law, and straightway, prices advanced another one-fourth penny, which advance was contributed to by all sections of the trade. What has been the result? The Americans wanted no wool, and have not bought anything of importance, with the consequence that the whole of the advance has disappeared, with probably a little more in

addition. The result is, therefore, that there is not a single stock of wool in this metropolis of the British wool trade which could be sold to-day without losing money.

The course of the colonial wool market has been the same. The September sales commenced with an advance of 5 per cent upon July, but this could not be maintained throughout a three weeks' sale. Indeed, the situation in colonial is far worse at the close of the year than in English, as there has been a continuous fall in the price of Botany tops during the last three months, and as wool is being bought in the colonies to meet these low prices, there seems no reason to look for higher rates for some time.

The fact is, during the whole of the past year the United States tariff agitation has sat like a nightmare upon the chest of Europe. We have had, so to speak, tariff at every meal. Did we have several weeks without business, tariff would soon make up for it. Were prices dropping decidedly below cost, and were buyers bidding less every time they came to market, the tariff would soon turn the tables. In fact, one could not ride in a tram or a train, or on a steamer, or read a newspaper without being in the first place chilled by the "winter of our discontent," and then lured on to hope by this "summer sun" of tariff.

If the whole world had been one vast confederation of states, and Europe had elected the Democratic party to represent its interests at Washington, we could not have held a stronger belief that that party was working in our interests. It raises, therefore, a grim smile when it is clearly brought home to us that the American Government have legislated solely in the interests of the American people.

No one can say that this journal is in any way responsible for the misguided opinions of our traders upon this question. What has happened is precisely what we have said would happen under such circumstances. And this seems to us a fitting opportunity for setting forth the situation afresh.

A year ago, we pointed out that free wool could not of itself bring about any change in the price of English wool, as the prices of American domestic wool had already fallen to the level of our own. As a matter of fact, American wools were selling on a basis of free-wool prices for twelve months before the tariff act came into operation. This alone, as we pointed out, of itself prevented any exportation of our wools, and accounted for the utter absence of export trade.

But the mental idiosyncrasy of the British wool stapler is peculiar. It seems to be useless to inform him that America grows 60,000,000 sheep, or nearly twice as many as we grow ourselves. He is possessed with the idea that by some remarkable freak of nature the American sheep do not grow wool, or that, if they do, it is nothing but "cow tail" and "brown ends." It is as well, therefore, to reassert that Boston is one of the largest wool markets of the world; that America grows more wool than we do, and that, with the exception of puge luster, much of it is as good as, and much of it better than English, and also, that a large portion of it competes with English.

It must also be noted that the American manufacturers have had a very bad time, and the trade has passed through a very severe panic, with the effect that stocks of domestic wool had accumulated to an enormous amount. In fact, it was said at the beginning of their clip of 1894, that there was in stock at that time the equivalent of a whole year's growth. The effect of this was seen in the course of prices, which, for the greater part of the clip season, ruled from 1d. to 1½d. lower than similar sorts on this side. And although prices are a little better, such wools as our half-breds can be matched in American wool at as little as, or less than, our prices, the cost of freight, etc., still standing in the way of exportation.

Again, American agriculture has also had a very bad time, and large numbers of sheep have been killed off, which has thrown great quantities of skin wool upon the market. Some of this has been at one period so cheap that it has been exported to this country, where it has given great satisfaction, and there is no doubt that, with a free interchange of wool, there will often be times when we shall import American wool to advantage.

This brings up another point, showing the immense advantage free wool is to the Americans. With a 12-cent duty on imported wool, the American article was, as it were, "walled

in," and had to be made the best of, often for purposes for which it was not suitable, with a corresponding evil effect upon native goods. English manufacturers, being left free to select the most suitable wool for any purpose, were thus able to produce the best possible article at the lowest possible price, and this condition was of vital importance in enabling them to fight successfully the high duties upon goods. This position of affairs no longer prevails. American manufacturers have, like ourselves, the free choice of the wools of the world, and in the future, instead of being compelled, for fiscal reasons, to stick to a few lines of wool which their competition made dear, they can now buy the cheap wools which were formerly left to us, and of which we made good use in the competition for their trade in finished goods. But enough! We have said so much about the relations of our trade with America, because they have been the constant theme of conversation during the many idle hours which wool dealers have spent during 1894. The American manufacturers have got a very good protective tariff for themselves, and they know it. We shall always have a good trade with America, but it will come not from arbitrary and political regulations, but with a recovery from financial disasters and a steady return to prosperity of the American nation.

One of the most notable features of the year has been the behavior of the continental markets for merino wool. To understand this, it may be as well to look at Schwartz's table of the "total imports of wool for the season into Europe and North America:"

Year.	Colonial.	Buenos Ayres.	Total.
	<i>Bales.</i>	<i>Bales.</i>	<i>Bales.</i>
1875 .....	917,000	242,000	1,159,000
1880 .....	1,088,000	28,000	1,377,000
1885 .....	1,282,000	402,000	1,684,000
1890 .....	1,699,000	317,000	2,016,000
1891 .....	2,005,000	380,000	2,385,000
1892 .....	2,126,000	415,000	2,541,000
1893 .....	2,074,000	414,000	2,488,000
1894 .....	2,156,000	439,000	2,595,000

The course of trade during 1893 seemed almost to show on the face of it that the demand was keeping pace with the supply, and that the trade was able to cope with the enormous increase in the production of colonial wool. Recent events, however, have shown that a great portion of this apparent steadiness was hollow. Again, the expectation of what was to come when the tariff was changed, has probably been mainly responsible for what has happened. Stocks have been kept up on all hands throughout Europe beyond the needs of any of the holders, in the hope that something better was in store, and consequently, prices were not allowed to reach their true level. This hope has been partially destroyed by the course of events during the last three months, and large quantities of tops have come out for realization. The result has been disastrous. The false hopes held out by the slight improvement which took place in September had the effect of further increasing stocks, and when this disappeared the pressure to sell was great and the downward course was rapid. There is, however, one factor in determining the relatively low prices ruling for B. A. tops which should be mentioned. The condition of the last clip of Kiver Plate wool is exceptionally bad, owing to the fact that the crop of burrs was particularly abundant during the last season.

In both directions, the evolutions of the market were accentuated by the great gambling establishments known as "terminal top markets," and at Antwerp and Roubaix, which are now the Monte Carlo and Monaco of the top trade, prices have fallen during the last three months something like 41 per pound, recent rates at Antwerp for "Contract B" ordinary merino tops being as low as 14½d. The better combined English tops have sympathized, but not to the same extent. Thus, the top trade has suffered very great losses, and with 63,000 bales held over from last sales and a new clip to face, the immediate outlook is not very brilliant. Our annual wool sales, which, as usual, are issued with this review, bring the

requisite statistical information up to date, and we can only hope that the close of 1894 marks "the darkest hour before the dawn."

#### MOHAIR AND ALPACA.

The Review speaks of the mohair and alpaca trade with the United States as follows:

The past year has been one of the most disappointing ever experienced in the mohair trade. There have been greater fluctuations in the price and greater individual losses in former years, but in no previous season have the expectations of improvement been so general and so sanguine as in 1894, and the subsequent disappointment so great. The settlement of the United States tariff bill, coming as it did just at the commencement of the new clip, caused most buyers to operate freely, sending the price up to  $1\frac{1}{2}$ d. per pound. Then, when the clip was over, and importers had got their purchases home, nobody wanted any mohair until November, by which time the rise was all lost, and the year seemed about to close with the price  $1\frac{3}{4}$ d. per pound lower than at the beginning. Within the last ten days, however, values have hardened a little, and may be placed at about a farthing higher.

#### YARNS.

The yarn trade is disposed of as follows:

In reviewing the past year, there can be but one opinion—that it has been a year of disappointed expectations and unfulfilled hopes, ending in a general lowness of prices, in some cases unprecedented. And not only has the Bradford spinner had an exceptionally hard time, but his continental brethren in both France and Germany have had equally, if not actually more, unfortunate experiences, and at the present time, spinners abroad are offering yarns at quotations hitherto unknown. This applies more particularly to Botany yarns, notably in the finer counts, which have reached prices that would make our Yorkshire spinners shudder.

But while our foreign competitors have been suffering acutely from the general depreciation of values, our lot has been little better. For the first part of the year, it was hoped that the substitution of the Wilson for the McKinley tariff in the United States would bring with it an all round improvement in the state of trade. It was thought that, with the abolition of duty on wool, the demand would receive a considerable impetus. American buyers were expected to flock over to the London sales, and prices would go up. To this expectation may be attributed the slight rise which there was in worsteds, wets, and tube yarns in May and June. As we know now, the hoped-for result did not take place. The Americans came, but did not buy much, and values have gradually sunk until now they are at a point lower than has ever before been reached in Botany yarns, and almost at their lowest in crossbreds.

An increase in the American trade, with a spell of frost, would make a considerable difference for the better, and would brighten up some rather gloomy faces on 'change. It is pleasant, in the general dullness of trade to turn to the Botany mixture branch, which is now showing no small animation. Orders have come in this autumn better than they have done for a couple of years back, and several Botany spinners are growing busy in mixtures and solid shades. Prices are low, especially in the case of large quantities per shade, but the demand is there, and, doubtless, any movement will be upwards.

This demand is chiefly due to the orders on worsted coatings for America. During the last two years, stocks in America have been diminishing, and now that the Wilson tariff has made the duty more tolerable, buyers are beginning to operate.

The position of the home-trade spinners, especially of spinners of the merino class of yarn, has been, throughout the year, a most unhappy one. Owing to the falling off in our American trade in the previous two years, the production has always been ahead of the demand, with the result that prices had steadily drooped. The year which should change the American tariff was looked to as certain to bring them prosperity, and so they, perhaps more than any other people in the trade, have felt most keenly the general disappointment.

## PIECES.

The report thus alludes to the worsted coating trade with the United States:

The piece trade has been no exception to the rule of 1894—high hopes, disappointed expectations. For several years previously, we have had to write of a steady growth in the home trade, due, in part no doubt, to the run on dress goods of a type in which Bradford excels, and of a steady shrinkage in our continental and American trade. This year, however, we have to record a poor home trade as well. The export trade has occasionally, in some respects, been worse than it was in the past year, but the Board of Trade returns for the first eleven months of the year shows that, on the whole, it is still a diminishing quantity. Worsteds have suffered much more severely than woollens, the fall in value of one year's export in the short space of three years amounting in worsteds to over £2,000,000, and in woollens to over £1,000,000. Taking the last three years, the values for the first eleven months of our export of worsteds have been as follows: 1892, £8,104,000; 1893, £7,561,000; 1894, £6,076,000. The corresponding figures for woollens are: 1892, £5,231,000; 1893, £4,835,000; 1894, £4,208,000. Germany, Holland, and Belgium have had rather better customers for woollens, and France has taken 10 per cent more in worsteds in 1894 than in 1893, but otherwise, there is little that is encouraging to be gathered from a study of a Board of Trade returns, and the continental and shipping trade generally has been disappointing. If the year has not actually been a bad one in the Canadian trade, it has still fallen far short of 1893. Our North American possessions, however, have felt the pinch of the pressure in the United States, and are more vitally interested in the tariff changes of the year than any European country can possibly be. Now that the tariff wall between the United States and Canada has been lowered, the home trade of the Dominion is improving, and we may reasonably hope to benefit thereby in the coming year. Business with the South American republics is never very good for long together. This year shows a considerable falling off. Merchants in the Argentine Republic overbought themselves in 1893, and this year many goods have been put up to auction in Buenos Ayres and have fetched such low rates that exporters' prices were out of the question. Stocks, however, must be getting cleared out, and, given immunity from a revolution—rather a large "if" it is true—we may look for something better ere long. Chile is trying to get back to a gold standard, and if this is accomplished, the position of the nitrate workers will doubtless be materially improved. But gambling in exchanges is a besetting weakness of the Chileans, and exchange has ruled so low through the year that the gold value of cloth has put it beyond the reach of the people. The falling off in the United States trade in the latter part of 1893 was most marked, the coating trade having almost collapsed after June of that year. For the last four months of 1893 and the first five of 1894, the monthly average fell to about £80,000—scarcely more than a third of what it was in the latter half of 1892 and the first half of 1893, while it was little more than one-fifth of what it used to be in the pre-McKinley days of 1890. This terrible depression was, of course, due entirely to the protracted period of financial crisis in America, for we find that even in June of the present year, when the new tariff was becoming imminent, and when, of course, merchants were only working from hand to mouth, there was already a recovery consequent upon the sounder commercial position in the United States. When it is remembered that, with the exception of mohairs, alpacas, and goods in which cotton is the article of principal value, no Bradford goods have, up to this moment, benefited by the new tariff, the figures of the past few months are full of encouragement, and the return for December will, we understand, overtop any month for a long time past. Were the people of the United States as prosperous to-day as they were four years ago, there would be nothing to fear from these large exports. The stocks of jobbers and storekeepers were depleted, and no doubt a big lot of goods could readily be absorbed despite the bad times. But it should not be overlooked that ever since the tariff question was settled, every woolen mill in America has been taxed to its utmost, and many empty shelves will by this time have been filled up.



The trade in linings throughout the year has not been so bad as the coating trade. The revival in the latter branch has been very striking in the last three months, and the increase of the figures for wool is also significant. So far, not much has been done in dress goods. American manufacturers have succeeded better in this line than in any other, and there is not the same scope for the dress goods weaver as for the makers of articles for men's wear. Still, some small shipments have been made tentatively, and, in some lines, there are prospects of more business. What the new tariff has done is to remove the weight duties, leaving the ad valorem duties where they were; so that, as the weight duties just about counter-balance the wool duties, the relative position of the English and American manufacturer remains practically unaltered; but as our Bradford goods can now be put before the consumer at a greatly reduced price, and as he will have the opportunity of selecting from a much wider range and variety, the area of our constituency may naturally be expected to widen. Goods over 4 ounces, such as Sicilians and moreens, were practically shut out by a duty of 120 per cent. At the same time, the American manufacturers have made great advances in recent years, and are prepared to resist us with very strong competition, and it is still quite an open question as to how far Bradford will succeed in regaining a hold upon the American market. The course of trade in the next few months will, therefore, be full of instruction, and, let us hope, of incentive. Most of the large orders placed in this market a few months ago were taken at a very low figure, and it may be that they will not be repeated if prices advance materially.

CLAUDE MEEKER,  
*Consul.*

BRADFORD, *January 1, 1895.*

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## CHEAPER VENISON FOR AMERICAN CITIES.

The abundance and excellence of venison can not fail to strike the attention of those who live in German cities. It is a common dish practically all the year round; its price is so moderate that only the poorest classes fail to taste it now and then. The reason for this is the high cultivation of forestry and the care with which deer are bred, fed, and protected from poachers.

Considering the excellence of venison as food and the small cost of rearing herds of deer under proper protection, it is in America, especially, that steps to form practical deer parks might be easy and of profit. In the neighborhood of great cities the supply of water has to be regulated by the preservation of large districts of more or less mountainous, more or less woody country. In New York, for example, the Adirondacks and the watershed of the Croton River are, or are to be, reserved for reasons affecting the water supply of New York City and of a large part of the State—directly or indirectly affecting it. It is in such districts that a scientific breeding of deer might be carried on with small cost, relatively speaking. The annual killing and sale of animals of the proper sort would furnish an income far beyond the aggregate of salaries for overseers, foresters, and guards.

Of late the problem of improvement on the indigenous red deer of Europe has occupied various gentlemen in North Germany, among whom of special note is Herr Winter, in Berlin. He has been experimenting for the last decade on the American wapiti (*Cervus major Americanus*) as a cross on the

small native red deer (*Cervus elephas*), in order to obtain a larger, heavier, more meaty animal, and thus increase the value of Prussia's deer herds.

Mr. Winter has been successful in every way. By removing the does of wapiti and supplying the red does with young wapiti stags only, he obtained the desired cross. Between 1887 and 1890, he gained forty half-breeds from such unions, and he now has eighty-six. They are regularly of very much greater size than the red deer. He has also proved that wapiti and red deer are related through their ancestry, because the half-breeds are not sterile, are not mules, but breed readily to red deer or to wapiti again. Wapiti were first brought to Europe in 1835, but did not do well in England or on the Continent. But some of them left half-breed descendants in Silesia, and in 1876 the late Emperor William I shot a stag of twenty-two points weighing 500 German pounds. Now, however, the certainty of the practical benefits of the cross has been demonstrated, and more wapiti are to be imported from America to still further enlarge the structure and strengthen the breed of the deer in North Germany.

In the United States forests, wild animals have been cut off with a recklessness which is bringing its own punishment, or has already brought evils. It seems well to call the attention of individuals, clubs, corporations, and States to the folly of neglecting any longer the formation of parks, and furthermore to point out the way to a supply of food which is savory and can be made reasonably cheap. Large tracts of hill range and woodland, now absolutely necessary to the water systems of cities, must be carefully watched and guarded in any case. They might be stocked with wapiti and Virginia deer, and the herds then regularly decimated to supply the markets with wholesome food.

CHARLES DE KAY,  
*Consul-General.*

BERLIN, *December 20, 1894.*

## PUBLIC GRANARIES IN GERMANY

In continuation of my report dated November 19, 1894, concerning the programme of the conservative landowning elements in the German Empire,\* I have the honor to submit the following :

Depression of prices for grain and other agricultural products continues to agitate the representatives of the agricultural and landowning classes everywhere in Europe, as it does at home. You have doubtless noted the resolutions passed by certain unions of agriculturists assembled at London on the 12th and 13th of December, which were directed against speculation in grain on the exchanges, accompanied by special requests to the British Government that trading in fictitious food values be forbidden by law, owing to the harm it does by lowering prices, and that only such trades shall be lawful as are based on the actual articles.

\* Published in CONSULAR REPORTS No. 172 (January, 1895), p. 92.

Somewhat similar action was taken on the 19th of December last by the Central Agricultural Union of the Province of Saxony (a part of Prussia). It was stated that (1) the present price of grain does not cover the cost of production, (2) a change of conditions is not to be expected without a change of the laws, (3) besides grain, most of the other agricultural lines are in bad plight, if not equally ruined, and (4) intelligence, thrift, and personal industry no longer suffice to maintain the existence of our farmers and leaseholders.

It was resolved that a memorial (*Denk-Schrift*) be addressed by the central union to the highest officials of the German Empire and Prussia, provisionally, to the following effect:

(1) A thorough reform of the grain exchanges on the basis of trustworthy, truthful statistics as to prices current, and, further, on the basis of actual trading in actual wares; also, a systematic regulation of the commission business.

(2) Introduction of the proper steps to obtain a regulation of international coinage and finance, in order to overcome the unhealthy growth of prices in agricultural products engendered thereby.

(3) A more comprehensive regulation of our railway system as regards freights and transportation, in order to obtain greater fairness for inland commerce in agricultural and food products.

(4) Abrogation of every sort of customs bonus (*Zoll-Kredite*) for grain and mill products.

(5) Examination on the part of the Empire, and eventual establishment of measures to bring proffers and imports of foreign grain into a fairer relationship with the actual requirements of inland Germany.

(6) A considerable increase of funds for land improvement (*Land-Kultur*) in the way of encouragement of scientific research and of education in agriculture; also, the founding of societies, the improvement of breeds of cattle, etc., as well as the creation of cheaper capital in order to supply the demands of personal credits in cooperative channels (*auf genossenschaftlichem Wege*).

(7) The establishment of real estate loan institutions (*Real Kreditinstituten*) for the purpose of lending money to owners of small properties.

Not less noteworthy is the attention being paid to public and private granaries as means to set limits to speculation in grain and protect the country from great changes in the price of grain, owing to failures or excess of harvests abroad and in Germany. Conservative papers point to Russia's public granaries as object lessons worthy of German imitation. According to a report made by the elders of the Merchants' Guild of Berlin, to the Prussian Minister of Commerce, the Empire has forty-five steam mills and eight distilleries, in connection with which are accommodations for the permanent storage of grain (silos), and in addition to these there are public granaries at Mannheim, Cologne, Verdingen, Ludwigshafen, and Worms.

According to this report, the grain grown in Germany is not well adapted for laying down in silos, because inland grains vary much in quality, and it is not feasible to separate the lasting sorts from the less permanent kinds. The elders further state that silos do not work well for German grain in general, owing to the commonly moist quality of the grain grown here. Silos are, however, well adapted for the preservation of the best dry grain in

the markets of the world, "for instance, American red winter wheat No. 2, provided with certificates, and Russian rye with a proper weight of 9 poods to the *tischerwert*" (325 pounds to 5.956 bushels).

On the other hand, organs of the agricultural interests dispute the report of the elders as to the moist, unkeepable quality of inland grain, and impugn the report as influenced by the commercial leanings of the Berlin Merchants' Guild.

A strong movement is on foot here to establish granaries more or less on the Russian plan, either under Government control or on cooperative principles (which would practically amount to the same thing), in connection wherewith should be a system of loans of money from Government on the grain therein stored. By this means, it is hoped that farmers would get capital cheaply, middlemen between grower and buyer would be suppressed, and the grain would be treated in the best way to preserve its selling quality.

The assembly of the Central Agricultural Union of Prussia, above mentioned, also passed a resolution calling on the Government for granaries of this sort, and expressed the hope that their establishment would permit the War Department to buy for the army "such breadstuffs only as grow on German soil."

These movements on the part of the Prussian agricultural interests have so far produced no audible echo in the Reichstag. Nothing definite is known regarding the weight which will be given them by the Government.

CHARLES DE KAY,  
*Consul-General.*

BERLIN, *January 4, 1895.*

## AMERICAN WHEAT FOR MACARONI.

I beg to call the attention of those interested in markets for American wheat to the quantity of Russian wheat imported from the Black Sea at the ports of Salerno and Torre Annunziata, in this consular district, viz., in 1891-92, 3,436,655 bushels; 1892-93, 3,751,779 bushels.

There are 718 flour mills and 377 macaroni manufacturers in this district that make, on an average, nearly 90,000,000 pounds of macaroni annually worth, in Italy, \$3,118,716.

We may say, therefore, that out of 3,751,779 bushels of foreign wheat, there were made 88,826,760 pounds of macaroni and the rest ground into flour. Twenty per cent of this macaroni is exported to the United States through this consular district.

Macaroni made from foreign wheat, when exported, receives a drawback of all the duty paid by the importer, deducting the increased weight through the mixture of water, etc., for which there is a special allowance.\* Consequently, custom-house certificates of payment of entry duty are in lively

\*62 per cent; duty, 7.50 francs per quintal.

demand at the ports of import and are freely bartered. Macaroni and flour exporters buy them from millers who have kept their grain in the country for local use, and the exporters add these certificates to their own legitimate ones, thus receiving large sums as drawback. It has been stated that the Italian Government is thus deprived of hundreds of thousands of lire annually.

The duty on foreign wheat being thus reimbursed to the exporters of macaroni or flour, and it having been demonstrated that no manufactories in the world can make macaroni like the celebrated brands of Gragnano, Torre Annunziata, Castellamare di Stabia, Nocera, etc., on account of special influence of climate and water, it is worth serious consideration whether macaroni made from American wheat could not be treated in some such manner as shooks from Maine—that is, entered under a reduced tariff.

An annual trade of nearly 4,000,000 bushels, which, at 60 cents a bushel delivered in Italy is worth \$2,400,000, would be worth securing by our grain merchants. Fast American schooners, such as ply between Baltimore and Brazil, ought to carry freight at such cheap rates as to enable us to compete with the English, Greek, and other tramp steamers that now monopolize the grain-carrying trade from the ports of the Black Sea.

No port in Italy is better situated for this trade than Castellamare di Stabia. Its harbor is placed at the base of mountains 4,000 feet high which rise directly from the sea, and a heavy stone breakwater protects it from the northwest. A basin  $49\frac{1}{2}$  acres in size gives good and secure anchorage to vessels of any size. Small vessels drawing from 10 to 18 feet can discharge directly on to the quay, where there is a railway track which connects with Gragnano and all parts of the provinces.

I am not competent to say what allowance per pound, on Italian macaroni made from American wheat with a discriminating tariff, would enable our hard wheat to compete with the Russian, but respectfully submit that the question deserves consideration.

The above considerations seem especially pertinent, as a dispatch from Rome announces that negotiations between Russia and Italy are nearly concluded, by which the former reduces the import duty on some of the principal Italian exports to that country in return for special concessions by Italy in favor of Russian petroleum and wheat.

HENRY G. HUNTINGTON,  
*Commercial Agent.*

CASTELLAMARE DI STABIA, *January 15, 1895.*

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## AMERICAN TOBACCO FOR ITALY.

The fertile plains on the Sarno River, to the south and west of Mount Vesuvius, in this district, were chosen by the director of the Government Botanical Institute of Portici as particularly favorable to the growth of American (Kentucky, Kentucky Burly, and Virginia) and Sumatra tobacco. The

deep, rich soil, geological formation, wonderful fertility, and previous experiments indicated that this region possessed extraordinary fitness for experiment. Five localities, attached to the Italian Government agency at Cava dei Tirrini, were selected, as follows :

Locality.	Extent.	Variety.	Quality of soil.
	<i>Meters.</i>		
Nola.....	11,813	Sumatra.....	Volcanic, slightly calcareous.
Angri.....	10,270	Virginia.....	Do.
S. Gennaro Palmo.....	10,000	Kentucky.....	Do.
Sarno.....	10,000	Kentucky Burly.....	Alluvial, calcareous, and volcanic.
Poggiomarino.....	10,000	Kentucky.....	Do.

The seeds were planted in richly manured beds about February 14 for Sumatra, and from February 21 to 27 for the American varieties. The seeds, with the exception of Sumatra, germinated in from ten to eighteen days. The growth proceeded well and regularly. From the 1st to the 10th of May, the plants were transplanted to the fields, and this work was completed between the 20th and the end of May.

The beds were freely enriched with horse manure, and from the 10th of April green manure, goat manure, peat, nitrate of potash, and ashes were added as fertilizers. The plants were set in rectangular lines 70 centimeters apart for Kentucky, 60 to 70 centimeters apart for Virginia, and 50 centimeters apart for Sumatra. They were watered and covered with foliage for twenty-four hours, but many were lost, owing to lack of moisture, causing irregularity in the growth on account of removals.

The plants were topped in the usual manner on the appearance of the flower, about ten of the most vigorous of each variety being left for seed. Kentucky Burly at Sarno, cultivated for the first time in Italy, seemed backward in development, but subsequently pushed on rapidly and developed more vigorously than any other variety, retaining its native American characteristics.

Peat, as manure, increased the verdancy of the leaves in the beginning ; green manure was then used, and nitrate of potash acted vigorously on the vegetation.

The leaves were gathered, as mature, at Angri from the 22d of August to the 12th of October ; at Nola, July 17 to September 5 ; Palma, August 31 to October 10 ; Poggiomarino, August 16 to September 26 ; Sarno, August 22 to October 12.

The drying seems to an American very primitive, as it was effected in huts with sides and roofs of straw matting, and not as with us in the Connecticut Valley, in well protected and ventilated sheds. Neither were the entire plants cut down and dried on the stock, but the leaves were stripped separately, when ripe, as appears to be the Oriental custom.

The Kentucky Burly gave large, well-developed leaves of a golden color; Virginia produced leaves almost normal in size, of good texture and chestnut color.

Place.	Species.	Number of leaves.	Weight.	Total ex- pense.
			<i>Kilograms.</i>	<i>Lire.</i>
Nola.....	Sumatra.....	152,281	1,999	102.40
Angri.....	Virginia.....	275,187	1,610	77.00
Palma.....	Kentucky.....	375,244	2,140	57.30
Sarno.....	Kentucky Burly.....	333,796	2,880	63.05
Poggiomarino.....	Kentucky.....	326,737	1,960	60.75

With the present system of surveillance and counting of individual leaves by regularly delegated Government inspectors, it will be many years before these carefully studied experiments result in any practical solution that will interfere with the sale of American tobacco.

During the experiments of several years, it has been discovered that new varieties are produced, and the laboratory at Portici has made interesting experiments in crossing varieties in order to create a plant with a national character which it maintains.

Tobaccos have been analyzed and soils prepared expressly, with salts, alkalies, or phosphates in proportion to what the plants required.

Dr. O. Comes, director of the Government Botanical Institute at Portici, has furnished me with the above data.

#### CONSUMPTION AND SUPPLY.

Italy annually imports an enormous quantity of tobacco from the United States. Contracts are invited for its supply to the Government at appointed seasons.\*

A combination of Paris, Bremen, and New York German houses have maintained the monopoly of the business for years and made millions in it. Our growers are prevented from bidding by the enormous guaranty deposit demanded by the Government, but a well organized syndicate of Kentucky growers might be able to secure the supply. It is necessary to secure from one-third to one-half of the quantity of tobacco required before bidding for the contract, as otherwise, holders would stand out for high prices. The guaranty system keeps the business in the hands of the old combination who have so long controlled it.

Last August the Government invited bids for over 7,000,000 pounds of Kentucky tobacco. An agent of tobacco growers from Kentucky, who consulted me, came to study the question, but, as there was not sufficient time to provide for the deposit, it was decided to prepare for the campaign next year. In the meantime, I obtained copies of the Government specifications, and also interesting information. The Italian Government does not grant the contract if there is only one offer, so it is the practice of the combination,

\* Tobacco and salt are Government monopolies.

it is claimed, to employ a "dummy" bidder, for whom they put up the deposit, and as his offer is less favorable than their own, they get the contract on pretty much their own terms.

The present combination furnishes qualities which are said to be far below the standard, and the press of the whole country occasionally complains.

HENRY G. HUNTINGTON,  
*Commercial Agent.*

CASTELLAMARE DI STABIA, *January 1, 1895.*

### COTTON-SEED OIL IN GERMANY.\*

Referring to my dispatch of April 17, 1894, on the subject of legislation recommended by the Bundesrath to raise the tariff upon cotton-seed oil imported into Germany from 4 marks (95.2 cents) to 10 marks (\$2.38) per 100 kilograms (220.46 pounds), as to which I deemed it my duty to make inquiry at the Foreign Office and to make report to you, I have the honor to inform you that, for want of time, probably, the measure did not come up for action in the Reichstag at the then session. It has, however, again been recommended at the present session, and will be laid before the Reichstag soon after its reassembling on the 8th instant. My knowledge at this early stage of the matter, so far as the reasons advanced for the legislation are concerned, is derived from the newspapers. A reason suggested for the increase of duty is, it is understood, that the oil enters largely into the manufacture of oleomargarine, the cheapness of which substitute for butter lowers the price of the latter article, and so affects injuriously the revenues of the German agriculturists. The Society of Oil Manufacturers (*Verein der Oelfabriken*), in Mannheim, also urges the increase of duty on cotton-seed oil, as it competes with the oils produced by them from groundnuts and sesame. The higher duty (10 marks) is already charged on these latter oils, thus enabling the manufacturers to produce the oils from imported materials more cheaply than the oils can be imported. On account of its characteristics, cotton seed can not well be imported, and the American cotton-seed oil comes into direct competition with their products in the manufacture of oleomargarine, suet, and vegetable lards.

In view of the amount of cotton-seed oil exported from the United States to Germany (there appears to have been 1,440,896 gallons, of the value of \$592,413, exported in the ten months ending October 31, 1894), I have thought it important to advise you of the renewal of the movement for the increase of the duty.

Since writing the above, I have obtained an official copy of the proposed law, together with a copy of the official statement of the reason presented for the passage thereof. The reason given is that cotton-seed oil may be

\* See "Duty on Cotton-Seed Oil in Germany," CONSULAR REPORTS No. 172 (January, 1895), p. 87.



put on the same footing as regards duty as other "edible oils." The Government further recommends that, in order not to interfere with the soap industry, the duty on this oil in the condition in which it is used in the manufacture of that article should be reduced from 4 marks—the present rate on all cotton-seed oil—to 3.50 marks. The provision of the bill on this head is "Baumwollensamenöl in Fässer, amtlich denaturirt,\* 100 kilograms, 3.50 marks."

THEO. RUNYON,  
*Ambassador.*

BERLIN, *January 4, 1895.*

#### SUPPLEMENTARY DISPATCH.

Referring to the last paragraph of my dispatch of the 4th instant, I deem it advisable to furnish you with the technical meaning of the words, "amtlich denaturirt," as used in the paragraph quoted from the bill embodying the proposed changes in the German tariff law of 1885. The words mean that the oil which is to be admitted into Germany at the reduced duty rate is to be officially—i. e., in the presence of a German customs officer—denaturalized, or have added to it some chemical, which, without changing its character, renders the cotton-seed oil unfit to be used in the manufacture of any article intended for human consumption.

THEO. RUNYON,  
*Ambassador.*

BERLIN, *January 8, 1895.*

#### "BARGAIN SALES" IN GERMANY.

The complaints made by a number of German chambers of commerce regarding unfair competition in business and the gradually growing dissatisfaction in retail-business circles because of the disturbance of legitimate trade caused by auctions and fraudulent "bargain sales," has induced the German Ministry of the Interior to outline a law governing the case. This proposed act was first made public yesterday in the *Reichsanzeiger*, the official organ of the Government.

The provisions of the act are directed against the following phases of unfair competition:

(1) Attempting to place business offers in a particularly favorable light by means of incorrect declarations regarding the nature or prices of articles of merchandise, the amount of stock on hand, or the cause of selling such.

(2) Stating or making public incorrect data concerning a business or the person of its proprietor, the articles of merchandise or the commercial products pertaining to the business or its owner, which statements are in-

\* Methylated or otherwise rendered unfit for edible use.

tended to have the effect of hindering the sale of such goods or injuring the credit of the person owning them.

(3) The improper use of a name, firm, trade-mark, or other distinctive business sign or symbol in such a manner as is likely to lead to its confusion with the name, firm, or trade-mark of a similar business, to the use of which another party is justly entitled.

(4) The betrayal of or making public business or operative secrets for the purpose of creating competition with a similar business before two years shall have intervened from the time when the offender ceased his connection with the firm, where, in his capacity as employee, workman, or apprentice, he gained a knowledge of secrets of the kind mentioned. Equally punishable is the attempt to incite another person to commit such an act.

The above is an outline of the most important features of the proposed law, which will soon come before the federal council (Bundesrath) for consideration, and then, if accepted, be presented to the Reichstag.

It is a fact, conceded even by the opponents of the act, that the law as drawn up contains some valuable points. The only question is whether these are not more than counterbalanced by the weak features of the bill. In mercantile circles the opinion prevails, to a great extent, that if the bill becomes a law perfectly legitimate business operations will likewise be subject to the assaults of envious competitors and the danger of long and costly lawsuits will be incurred. The question, for example, as to what is exactly included in the term "an especially favorable business offer" is so largely a matter of individual opinion that a law based on its definition could be too freely interpreted. This would interfere with trade and commerce, in place of aiding them. Another circumstance that should not be overlooked is that the application of this law would rest with judges who have, for the most part, but a very superficial knowledge of business operations and of the difficulties which beset the business man of to-day.

The proposed law is directed, first of all, against those instances in which the managers of so-called "bargain sales," by means of fraudulent advertisements, effect a sale of merchandise of indifferent value, thus supplying the demand of one section or entire district for a considerable period, during which, of course, the legitimate business houses have to suffer. That acts of the nature mentioned are injurious to the welfare of the community is indisputable. But here, too, it is difficult to define the limitations of the expression, "fraudulent construction of facts."

In German journals of all shades of party belief, the proposed law is being subjected to much criticism, and it is more than doubtful whether it will be enacted a law by the Reichstag, at least in its present form. I append herewith a translation of the bill as it appeared in the Reichsanzeiger:

SECTION I. Whoever, in the course of trade, undertakes to make business offers appear especially favorable by means of incorrect statements of the facts regarding the nature or price value of articles of merchandise and commercial products, the source of supply of such articles, the possession of diplomas awarded, the amount of stock on hand or the reason for selling such, can be called to account and compelled to cease making use of the incorrect

statements in question. This action can be taken by any business man or body of business men manufacturing or placing on the market merchandise of the same character. For the purpose of rendering a protest of this kind effectual, temporary measures can be employed, even if the premises laid down in sections 814 and 819 of the civil statutes do not exactly cover the case in hand. In addition to demanding the cessation of the incorrect statements, the above-mentioned business men also have the right to claim damages of the originator of them for the injury caused to their business interests thereby, provided the former was aware of their incorrectness or must have known such to be the case. The sense of this proviso is to be so construed as placing a perversion of the facts intended to take the place of the "incorrect statements" mentioned on the same footing as the latter.

SEC. 2. Whoever undertakes to make business offers appear especially advantageous by publishing declarations or directing communications to any number of persons containing incorrect statements of the facts regarding the nature or price value of articles of merchandise or commercial products, the source of supply of such articles, the possession of awards, or the cause for selling articles of merchandise, shall be liable to a fine not exceeding 1,500 marks, or to a term of imprisonment not exceeding six months.

SEC. 3. A resolution passed by the federal council (Bundesrath) can decide that certain articles of commerce shall only be sold or offered for sale at retail in unbroken packages of a certain defined quantity or with a distinct statement of the quantity attached to the article itself or to its inclosure. Such provisions as are determined by the federal council shall be published in the Imperial Law Journal. Offenses against the decisions of the federal council in this matter shall be punishable by a fine to the amount of 150 marks, or by a term of imprisonment.

SEC. 4. Whoever states or makes public statements of fact regarding a business concern, or the person of its owner or the merchandise or commercial products belonging to the owner, such as are intended or likely to hinder the operations of the business or injure its credit, shall be liable to the party injured for corresponding damages, in so far as the statements can not be demonstrated to be in accordance with the truth. The party injured can also cause the offender to refrain from repeating or further publishing such statements. The provisions of the first paragraph are not to be construed as applying to this case if it is clearly apparent that it was not the purpose of the offender to injure the business operations or the credit of the firm. This latter construction shall be regarded as correct, particularly if the person making the statement or declaration or the one hearing it is entitled to a justifiable interest in the matter.

SEC. 5. Whoever, contrary to a better knowledge of the facts, so misconstrues them as to make false statements regarding a business concern, or the person of its owner, or the merchandise or commercial products of a business, or its owner, which statements are intended to interfere with the operations of said business, shall be punished by a fine not exceeding 1,500 marks, or by a term of imprisonment not exceeding one year.

SEC. 6. Whoever, in the course of trade, makes use of the name, firm, or the distinctive sign or symbol of a business concern, in such a manner as is likely to confuse those with the name, firm, or sign of a business to whose use another person is justly entitled, shall be liable to the latter for a corresponding amount of damages. The party thus injured is also empowered to cause the offender to refrain from such unjustifiable use.

SEC. 7. Whoever, for the purpose of competing or inciting competition with a branch of business, communicates to other parties, or otherwise makes public secrets of trade or business operations coming to his knowledge by reason of service as an employee, workman, or apprentice in a similar branch of business, before the intervention of two years from the time his service in such capacity has ceased, shall be liable to a fine not exceeding 3,000 marks, or to a term of imprisonment not exceeding one year, and to an amount corresponding to the damages.

SEC. 8. Whoever undertakes to incite another person to a violation of the provisions of paragraph 7 shall be punishable by a fine not exceeding 1,500 marks, or by a term of imprisonment not exceeding six months.

SEC. 9. In the cases provided for by sections 5, 7, and 8 the punishment by process of law shall occur only when complaint is made. A withdrawal of the complaint shall be allowable. Should judgment rendered in cases defined by section 2 decree punishment of the offender, it can be further conceded that such judgment be made public at the cost of the latter. Should punishment be decreed in cases defined by section 5, the party injured is likewise entitled to publish the judgment rendered at the cost of the offender within a certain period to be determined upon. The manner of publishing as stated shall be laid down in the judgment. In addition to punishment, as provided for by this law, the party injured shall be entitled on demand to further satisfaction to the amount of 10,000 marks. All the parties punishable shall be liable as joint debtors to the payment of such judgment. The payment of the latter, however, excludes all other claims to further damages.

SEC. 10. In civil processes claiming judgment under the provisions of this law, either in the complaint or counter complaint, the trial and decision of the case in its last stage shall be referred to the "court of the Empire" (*Reichsgericht*) in accordance with the sense of section 8 of the introductory law to the court constitutional law.

SEC. 11. Whoever has not the principal branch of his business located within the Empire, can only claim protection under this act in the same measure and degree as is granted to German business men in the country where their principal branch of business is located.

SEC. 12. This act shall take effect, etc.

LOUIS STERN,  
*Commercial Agent.*

BAMBERG, *January 10, 1895.*

## AMERICAN TRADE WITH GERMANY.

My attention has recently been drawn to a matter which I deem of sufficient importance to be considered in connection with the extension of the sale of American products and manufactures in Germany. It is said by agents at interior places handling American goods that most of the American houses have their representatives only at seaport places, namely, Rotterdam, Antwerp, Bremen, and Hamburg for their business in Germany. These representatives do not make business in the interior of Germany, for the reason that their customers at these seaport places object to it, and, further, because the business at the exchange is less troublesome and attended with smaller costs. The customers make use of the wares more as objects of speculation. They purchase more willingly such articles as are cheap and let them lie for months or so in warehouses in order to await an opportunity for speculation. Such merchandise as bacon and hams becomes, by long storage, impaired in value; such articles get a bad look and a disagreeable taste. When such merchandise reaches the trade, the purchasing public form a bad opinion of American products, and the demand naturally diminishes.

An agent at this place said to me that he had the experience, a few years ago, when much inferior merchandise from the United States was imported from Rotterdam and Antwerp, of seeing a great falling off in the demand, and the public did not want to hear any more of American bacon. During the current year, he received shipments direct from America, and the merchandise was fresher and the weight, also, was considerably better. His

opinion is that American firms should not restrict their business to seaport places, but should put themselves in direct communication with agents and purchasers at interior places. By this means, better prices would be obtained, and, above all, the demand would increase, and the mistrust in Germany of American products and merchants would disappear.

What is said of hog products would hold good also with reference to other articles. There are many articles in the United States that are only slightly, or not at all, known in Germany, which, if properly brought before the public, would find sale readily. For example, Mr. C. Bickenbach, of Cologne, has recently introduced into this part of Germany from Chicago, a mixture of beef and hog meat, put up in cans—the so-called “brawn,” which he has already succeeded in making considerably known. On the first shipments received by him he was required to pay only 20 marks (about \$5) duty per 100 kilograms (220 pounds), but now the customs officials have decided that this canned meat should pay duty at the rate of 60 marks (about \$14.30) per 100 kilograms, which is equivalent to about 120 per cent of the cost of the article to him. He has entered a protest against this decision, as, at such a rate, it would, he says, be impossible for him to continue the trade. Mr. Bickenbach says the United States has excellent flour which is little known in Germany. Such is the opinion of some of the merchants engaged in introducing American goods into Germany.

In this connection, I take occasion to mention that merchants in the United States are in the habit of sending regularly to this consulate all manner of advertisements of the goods they offer for sale, with the request that they be distributed among the merchants, which is, of course, always complied with. But I think this is a slow, if not altogether useless, way of introducing their goods to the foreign market. The merchants must be shown samples of the goods by a representative with whom they can talk as to their quality, etc. In other words, they must be pushed by active drummers who can speak the language of the country.

WM. D. WAMER,  
*Consul.*

COLOGNE, *December 20, 1894.*

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## GERMANY'S TRADE WITH JAPAN.

Germany's imports from Japan in 1881 amounted, according to German commercial statistics, to only 49,000 marks (\$11,662), while at the same period, German exports to Japan amounted to 1,491,000 marks (\$354,855). By 1887 the imports had risen to 817,000 marks (\$194,486), and the exports to 6,398,000 marks (\$1,522,724); in still later years the amounts continued to advance, until, in 1893, the imports had reached 7,600,000 marks (\$1,828,800), and the exports 18,578,000 marks (\$4,421,564). Both these totals do not give, however, a complete view of the extent of German com-

merce with Japan, for the reason that a large part of the trade is done through the intervention of England.

Japanese statistics furnish us with the following information as to the condition of trade in the country:

*Japanese exports and imports.*

Year.	Exports.	Imports.
	<i>Yen.*</i>	<i>Yen.*</i>
1883.....	36,747,760	31,956,466
1885.....	36,147,701	32,680,587
1887.....	51,547,407	51,671,846
1889.....	69,426,081	66,173,398
1891.....	78,806,315	63,804,534
1892.....	90,480,534	75,903,207

\*According to United States Treasury circulars, the silver yen was valued as follows, on January 1, of each year, viz: 1884, 86.9 cents; 1885, 85.8 cents; 1887, 78.4 cents; 1889, 73.4 cents; 1891, 83.1 cents; 1892, 74.5 cents. The gold yen is equal to 99.7 cents. The Treasury circulars say of Japanese currency: "Gold is the nominal standard; silver practically the standard."

These figures show a great advance both in the export and the import trade of Japan. The extent to which the United States, Great Britain, France, and Germany participate therein is shown by the following data:

*Japanese exports to various countries.*

Year.	United States.	Great Britain.	France.	Germany.
	<i>Yen.</i>	<i>Yen.</i>	<i>Yen.</i>	<i>Yen.</i>
1888.....	22,618,483	8,710,013	13,636,251	1,617,565
1889.....	25,282,873	7,664,599	14,258,727	1,638,383
1890.....	19,821,437	5,638,980	8,354,394	846,921
1891.....	29,795,755	5,633,137	15,120,075	1,456,596
1892.....	33,674,971	3,921,753	18,093,694	940,783

*Japanese imports from various countries.*

Year.	United States.	Great Britain.	France.	Germany.
	<i>Yen.</i>	<i>Yen.</i>	<i>Yen.</i>	<i>Yen.</i>
1888.....	5,648,734	28,693,567	4,125,190	5,260,897
1889.....	6,143,171	26,067,935	3,334,168	4,887,900
1890.....	6,874,532	26,619,102	3,869,332	6,856,956
1891.....	6,840,048	19,996,051	2,834,025	5,127,476
1892.....	5,988,054	20,789,332	3,620,500	6,375,048

It will be seen from these figures that the United States are the most important country for Japan's exports, and Great Britain the most important for Japan's imports. Further, while France is of far more importance than Great Britain for Japan's exports, the reverse is the case as regards the imports; here France has not even the importance of the United States and Germany. As respects the latter country in particular, the exports from Japan to Germany are subject to considerable fluctuations. This is, to a far

less degree, the case with the imports into Japan from Germany, in which a general tendency to increase is apparent, although it is still a long way from reaching the imports into Japan from Great Britain. To secure further successes in this field, strenuous efforts are now made by the German export trade, the more so as the conditions in Japan seem to be favorable to exertions in this direction.

Under the heading, "The Advance of German Trade, a Consequence of the War with China," the Osaka News says:

Before the war broke out, more than six thousand Chinese lived in Yokohama, who controlled a very considerable portion of our entire import and export trade. Since the declaration of war, some five thousand Chinese have left this port, and such a predominant share of the trade done by them has fallen into German hands that even the exportation to the English port of Singapore is now effected by German firms. Only in the importation of cereals and sugar can the English compete with them. That German houses have stepped into the places of the Chinese, is easily explained. The German nation has always been highly esteemed by us; their representatives among us have always been popular, and our liking for this nation has been deepened by the attitude which their press has maintained toward us since the beginning of the war, in great contrast with the press of a certain other country, whose sympathies were with the Chinese so long as there was any prospect of their being victorious. The Germans have been clever enough to avail themselves of all these circumstances. Quite lately, for instance, one of the largest houses in Yokohama—I. Arons—sent its travelers to Hongkong and Shanghai to open up direct connections after the Chinese agents had deserted the field. The house of Arons has further entered into a contract with the only machine weaving mill in Japan—the firm of Konakigawa-Menpugaissa, of Tokio—by the terms of which all goods made for export are to be supplied to this firm only. The Berlin art-publishing house of Wagner has established a purchasing branch in Yokohama, and has sent out a very popular representative in the person of Mr. Elkan. The Hamburg firm of Rhode has made a contract with the house of Wöllner, of Irkutsk, by which this house will, in future, have charge of the import trade to eastern Siberia. We have only quoted these few examples to illustrate the fact that, in consequence of the war, the wary Germans are on the high road to becoming the merchant princes of eastern Asia.

THEO. M. STEPHAN,  
*Consul.*

ANNABERG, *January 9, 1895.*

## MACHINE-ROLLED CHAINS.

A recent invention of rolls for making chains seems destined to revolutionize the whole trade of iron and steel chain making. It does away with the welded joint and secures uniformity, rapidity, and increased strength in construction. It was brought to my attention during an investigation of tin rolling. The new machine resembles somewhat the machine or roll that sinks impressions in hot or steamed wood, *i. e.*, its mode of working is similar. There is, first of all, the roll (fig. 1), and, second, a peculiarly formed bar of iron (fig. 2). The rolls are four in number, and are so situated and so arranged that they work simultaneously on the curiously formed iron bar, cutting it into links. A glance at fig. 1 will reveal much more of the *modus*

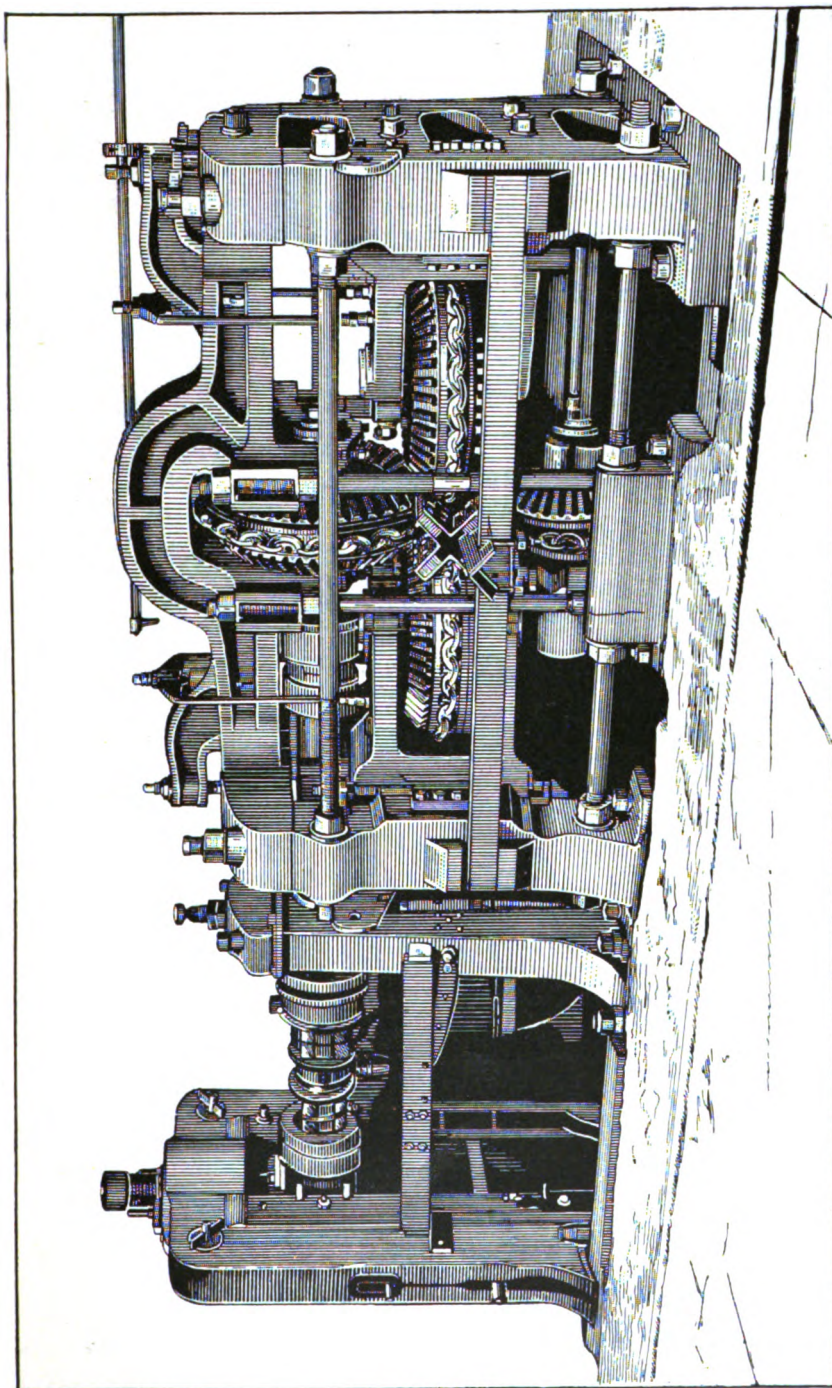


FIG. 1.



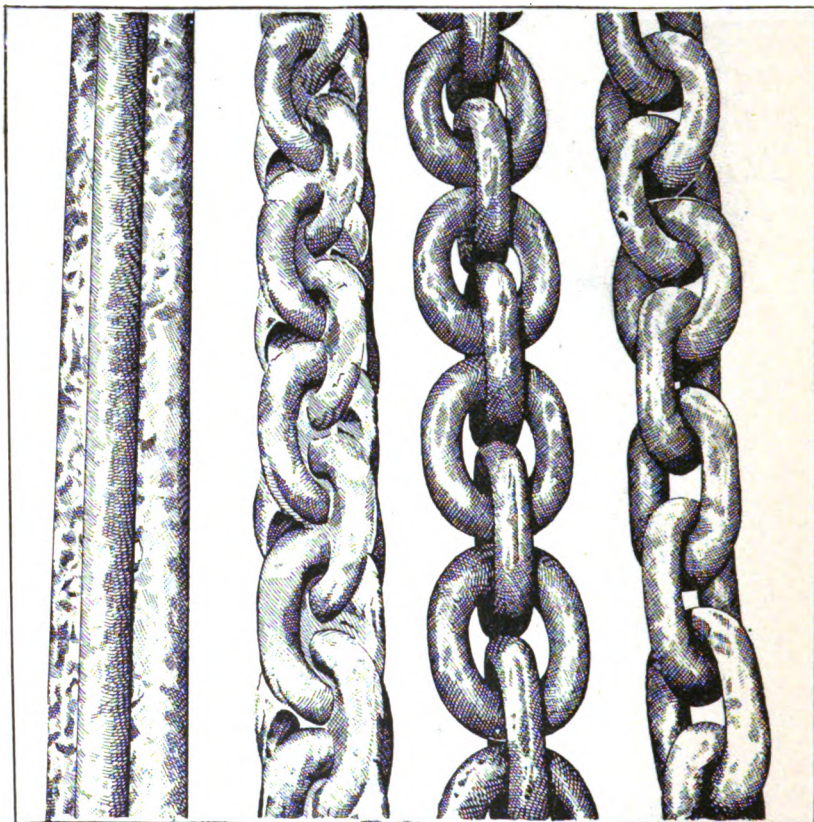


FIG. 2.

FIG. 3.

FIG. 4.

FIG. 5.

*operandi* than any description in words would do. The curves that look like chain links are the highly tempered, *i. e.*, hardened, steel dies or cutters. The gears fit into each other and operate simultaneously on the four flanges of the iron bar. At a point just back of the cross, that is, in front of the gears of fig. 1, the projecting cutters of the gears almost meet. Through this point passes the iron or steel bar at white heat. The gears revolve rapidly, turning out 3 to 4 yards of chain per second. The iron bar that goes in looking like fig. 2, comes out looking like fig. 3. By means of tongs, and cutters, and molds fig. 3 is made to look like fig. 4, in which the links are held together by very thin bits of iron which are easily cut. After some little labor in cleaning the links, the chain is run into a furnace, heated red, and then run through rolls to give its links the shape seen in fig. 5. It is claimed that this machine-made chain is better than the hand welded; that it does not require wrought or welding iron, but that it gives better results with fused irons and steels.

J. C. MONAGHAN,  
*Consul.*

CHEMNITZ, August 24, 1894.

## AMERICAN LEATHER IN SWITZERLAND.

I have repeatedly been asked, of late, where a No. 1 quality of oak-tanned belting leather might be obtained in the United States, and Mr. Ernest Williams, the United States consular agent at Lucerne, writes me that inquiries have been made at his office "concerning the best centers for the manufacture of sole leather, etc., in America," meaning, no doubt, the most reliable and advantageous direct sources of supply. In his letter asking for information, he adds:

Swiss leather was very cheap last year on account of the enormous quantity of cattle that had to be slaughtered, but there will be a good opening for American leather next spring.

This is probably correct, and there is, no doubt, an opening for a considerable increase of the importation of American leather into Switzerland, if the producers and dealers are willing and able to furnish the goods demanded in this market.

What is wanted here is the best quality of sole, upper, and harness leathers, while oak-tanned belting leather of the highest standard might also find a market, if it can compete in price with the domestic, German, and English article.

Sole, upper, harness, and split leathers are being imported already from the United States in considerable quantities, but it appears that the quality received has not always been satisfactory. A large dealer, who always keeps domestic as well as imported leather in stock, contends that most of the leather imported from the United States does not compare favorably with

the domestic product, and consequently, can not compete with it in price. He claims that American leather is generally inferior to the European article; that there is too little care taken in stripping the hide from the carcass, in some places pieces of flesh being taken up and tanned with the hide, while in other cases incisions or marks of the knife considerably reduce the value of the leather. Buyers also object to the branding marks which show through the skin and can not be obliterated, and to the insufficient trimming or rounding of the hides.

It is further claimed that the materials mostly used in tanning in the United States—hemlock bark and extracts—are not suitable for the production of the best quality of leather; that the hides are not left long enough in the vats, and that the whole tanning process is more hurried and careless, thereby leaving the leather more porous and less durable than that tanned by the less rapid, but more careful, slow, and tedious process still used in Europe.

Whether all these claims are fully justified, or partly due to prejudice, I am not able to judge. It is possible that the goods generally imported so far are not the highest, but the cheapest grades, used for the cheaper lines of goods which are manufactured in large quantities for exportation. In fact, one of the owners of a large tannery in this district admitted to me that the best quality of hemlock-tanned American leather he has seen was equal to the best home product, and that the principal objection to it is its dark color.

From the following table will be seen the declared value of the leather imported into Switzerland from the different countries in 1893, the United States being one of the main sources of supply, especially for sole leather:

*Importation of leather into Switzerland in 1893.*

From—	Sole leather.	Harness and belting leather, calf, etc.	All other kinds.
Germany.....	\$77,800	\$91,210	\$570,662
Austria.....	208	2,505	1,907
France.....	47,082	48,071	204,387
Italy.....	52,689	11,377	3,551
Belgium.....	47,015	3,706	89,621
Great Britain.....	54,715	9,553	60,251
British India.....			695
Russia.....	139		1,390
Scandinavia.....	58		
Denmark.....			77
United States.....	205,390	4,516	251,865
Brazil.....	1,419		174
La Plata states.....	1,783		463
Australia.....	23,038	492	4,285
Netherlands.....			811
Canada.....			116
Colombia.....			58

Besides leather, there were imported into Switzerland from the United States in the year 1893, machine belts of all kinds to the amount of \$5,421.37,

while the principal supply of these goods, besides the home product, came from Germany and Great Britain.

It is worthy of note, as has been stated in former reports, that but a small percentage of the American goods sold in Switzerland is brought here by direct importation; most of it comes through intermediary agencies in Germany and England, whereby the cost of the respective articles to the dealer and consumer in Switzerland is considerably increased. I can but repeat the suggestion often made by United States consuls in Switzerland that agencies for the introduction and sale of American products be established in one or more of the principal commercial cities of this country.

Prices of leather vary so much as to kind and quality, that it is difficult to give quotations. My attempts to get price lists from manufacturers and wholesale dealers have been unsuccessful, and even in the commercial papers I have looked vainly for information. All I have been able to elicit with any degree of reliability are the following prices furnished by a dealer at Zurich:

Description.	Prices.	
Swiss sole leather:	<i>Francs.</i>	
Common.....	2.70 to 3.10	\$0.54 to \$0.59
Superior.....	3.50 to 4.00	.67 to .77
Select extra.....	4.50 to 5.50	.87 to 1.06
Belgian sides.....	3.25 to 3.50	.62 to .67
French sides.....	3.50 to 3.80	.67 to .73
Select.....	3.80 to 4.50	.73 to .87
Belting leather.....	5.50 to 10.00	1.06 to 1.93

The above prices are per kilogram of 2.20 pounds, according to quality, the latter price, of course, being exceptional.

Splits and pebble grain have been imported to a considerable extent and appear to be still in demand, but I have not been able to obtain wholesale prices.

The only way to establish connections and effect sales here would be to submit samples, with prices, in each case, on terms conforming with customs prevailing in this country—from two to four months' time, or corresponding discount for cash after delivery of goods.

The duty on calf, sole, harness, and belting leather is 16 francs (\$3.09) per quintal (220 pounds); on all other kinds of leather, 8 francs (\$1.54) per quintal.

Circulars and price lists, which, however, ought to be issued in German or French, will be placed in the proper hands if addressed to the undersigned, who will also cheerfully furnish any special information that may be desired. It may be proper to state, however, that personal solicitation by members of firms, or their authorized agents, is more likely to result in establishing permanent connections and effecting substantial and satisfactory transactions than any other method that might be employed. In the leather trade, especially, the personal attendance, with samples of goods, at one of

the semiannual leather fairs held at Zurich, would probably be the best means of learning the state of the market and of extending the sale of the American product in Switzerland.

The regular spring leather fair at Zurich will be held on the 29th and 30th of April. These fairs, being attended by manufacturers, dealers, and consumers from near and far, afford the most favorable opportunity for studying the trade, learning the wants of the country and the prevailing prices, as well as for making business connections, closing bargains, and taking orders for future delivery.

WM. F. KEMMLER,  
*Consul.*

HORGEN, *January 4, 1895.*

## LEATHER-GLOVE TRADE WITH THE UNITED STATES.

I inclose herewith a translated extract from the general report of the Luxemburg chamber of commerce for the year 1893, which has just been published. This report shows how important our markets are to European leather-glove manufacturers.

GEORGE H. MURPHY,  
*Vice-Commercial Agent.*

LUXEMBURG, *January 3, 1895.*

EXTRACT FROM THE GENERAL REPORT OF THE LUXEMBURG CHAMBER OF COMMERCE  
FOR THE YEAR 1893.

[Translation]

The year 1893 began satisfactorily for the leather-glove industry. In the United States the Democratic party had obtained a majority so great that the abolition of the McKinley law was regarded as certain and imminent. In the spring, the price of skins was advanced 30 per cent by speculators. Regular orders gave the factories satisfactory employment, and it was generally hoped that there would be a good fall trade. All these hopes were, however, dissipated in the second half of the year. Business in America became very unsteady, owing to the threatened enormous augmentation of the silver coinage. This money has legal currency; its augmentation, which was not sufficiently limited by law, had been urged by the proprietors of silver mines, and threatened to result in the disappearance of gold money. It was not until the month of November that a victory was won over the proprietors of silver mines, and a bill enacted which secures to the United States a healthy currency. Commerce in general, and particularly by the trade in articles of luxury, suffered severely in this silver fight; but still greater business distress was caused by the protracted discussion of the important question of tariff revision. The prosperity of the European leather glove industry is dependent upon the condition of business in the United States.

About 50,000 dozen pairs of leather gloves were manufactured in the Grand Duchy of Luxemburg in 1893, giving employment to fifteen hundred persons. Wages remained the same as in the preceding years.

## COTTON PRICES IN EUROPE.

At a time when the financial world is watching the action of men in the cotton trade, it may interest our people, especially the planters, to know that this city—indeed all Saxony—is anxious as to results. Recently there came together in this city representatives of leading manufacturers from many parts of the Empire. The principal topic discussed was the unprecedentedly low prices of cotton. Mr. Emil Stark, a most reliable and careful observer in the cotton industry, reported tables of prices that prevailed on the cotton exchanges since 1814. From these I select the following showing the lowest and highest prices for midlings in Liverpool:

Lowest.		Highest.	
Year.	Price.	Year.	Price.
	<i>Pence.</i>		<i>Pence.</i>
1847-48.....	3. 62	1814.....	29½
1848-49.....	3. 5	1835.....	10½
1891-92.....	3. 66	1863-64.....	31½
1893-94.....	3. 78	1888-89.....	6½
November 12, 1894.....	2 93	1892-93.....	5½

During 1847-48, Europe was contending with political upheavals. In 1848-49, 3. 25d. was taken in an auction sale. On November 12, 1894, the price was nine-sixteenths of a penny below the lowest ever known before that date.

## COST OF PRODUCTION.

In the northern cotton belt, by aid of artificial fertilizers the production was 170 pounds per acre, at a cost of 7 cents per pound; in Texas, with no fertilizers, 250 pounds per acre, cost 5.2 cents per pound. The prices obtained for these, in Liverpool, were 3d. (about 6 cents). Deduct, then, 10 per cent waste, or weight loss, 0.6 cents for handling (*Spesen*); through freight, Texas to Liverpool, 1.25 cents; expenses inland, 0.25 cents; total, 2.1 cents. This leaves the Texas planter 3.9 cents for cotton that cost him 5.2 cents; and 3.9 cents to the northern cotton-belt planter, whose product cost 7 cents.

Anything more dangerous or discouraging it would be hard to imagine. What is now taking place among the planters was predicted in this city weeks and months ago. The following extract from the Manchester Guardian may prove interesting:

## THE COTTON MARKET.

We are suffering from a glut of silver, cotton, cloth, and yarn. Every day increases the transparent necessity for spinners and manufacturers to buy their supplies from "hand to mouth." Both spinners and manufacturers have recently departed from this rule and have

lost money thereby. The gigantic cotton crop hanging upon our rear, the Indian dumping ground laden to repletion with its 60 per cent excess of imports over previous years, indicate that our only hope lies in forcing down the price of cotton at each stage when the wheels of commerce promise to be scotched. We have nothing to do with the question, is the price of cotton reasonable? We are not cotton growers but manufacturers, and as such have to exact a profit from our toil. This can only be done by eschewing the ways hitherto traveled by those who esteem themselves smart. This class is no longer in popular favor. It has speculated again and again until it scarcely owns the rags it stands in. The continued fall in cotton yields a harvest to the men of phlegm. They are destined to force down cotton, yarn, and cloth until your Bombay spinner and manufacturer can not live. Force American cotton down to 2d. per pound, and your Indian cotton mills will become caverns where the auctioneer, like a vulture, will make his final feast.

J. C. MONAGHAN,  
*Consul.*

CHEMNITZ, *December 12, 1894.*

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## TRADE AND INDUSTRIES OF GUAYMAS.

This consular district is in a fairly prosperous condition. We had a good rainy season, therefore crops were good and cattle on the ranches fat. There is quite a large surplus of wheat for exportation, and an abundance of corn. Cotton is a good crop, and it is estimated there will be 10,000 or 12,000 quintals gathered, which will be mostly used in the cotton factory at Los Angeles, where they run sixty-four looms and produce unbleached domestic, or *manta*.

A woolen factory has been built within the last year in Ures, and is now in operation. It has eighteen looms manufacturing blankets, *serapas*, and such common articles. I understand it has already orders in advance to keep it running most of the year.

We have also a new tannery, so we will use up more hides than will be produced in the state. There is a *macaron* factory, a large soap factory, two or three match factories, and innumerable cigar and cigarette factories, all working actively and unable to supply the demand.

The large irrigation ditch which is being dug on the Yaqui River is progressing satisfactorily, and the parties propose to have it completed early this year. This will open up a very large tract of the finest land in the world for colonization and cultivation.

The marine ways at Guaymas, which have been in course of construction for the last year have been completed, and were successfully inaugurated last month.

Mining is being carried on with success and profit, and there are many new enterprises starting up to exploit new mines. I estimate that the amount of ores and bullion, concentrates, cyanides, sulphides, etc., exported from this State is nearly \$1,000,000 per month.

The Yaqui war still continues, with little prospects of its completion, although there are very few formal engagements. The Indians continue to

commit depredations on the neighboring ranches and plantations, but as soon as they get through with their raid they retire to their mountain fastnesses, and the troops have great difficulty in finding them.

The orange crop was abundant, and large quantities of oranges are being shipped to the United States with a prospect of obtaining good prices, as the Florida crop was so badly damaged by frost.

The health of this place is exceptionally good—no epidemics or contagious diseases.

CHAS. E. HALE,  
*Vice-Consul*

GUAYMAS, *January 9, 1895.*

No. 174—9.



## NOTES.

**Building Societies in the United Kingdom.**—Under date of January 18, Consul-General Collins, of London, in transmitting an official copy of an act of Parliament (57 and 58 Vict., Building Societies Act, August 25, 1894), says:

This act was passed in consequence of the great frauds perpetrated by many building societies, notably the Liberator Building Society, causing widespread misery and loss to the provident, and especially to the laboring classes of this country, who had been induced to invest, in many cases, their entire life savings in the above-mentioned and similar societies. This act of Parliament has been framed with a view to prevent the recurrence of such failures, and *inter alia* provides that an annual account and statement shall be forwarded to the chief registrar of friendly societies, setting forth in detail particulars as regards properties mortgaged to the society. It especially prohibits advances being made on a second mortgage unless the prior mortgagee is in favor of the society making the advance. It also provides that one of the auditors shall be a person who publicly carries on the business of an accountant; prohibits the pernicious system of balloting for advances; limits the borrowing power of societies; prohibits a director, secretary, surveyor, solicitor, or other officer of a society from accepting, in addition to the remuneration prescribed or authorized by the regulations of the society, any gift, bonus, commission, or benefit for or in connection with any loan made by the society, and if convicted of so doing, such director or officer shall be made to pay over to the society the amount or value of such gift, bonus, commission, or benefit, and in default of such payment shall be liable to be imprisoned with or without hard labor for any time not exceeding six months; and the person from whom he receives such gift, bonus, commission, or benefit, shall be liable, on summary conviction, to a fine not exceeding \$250, and in default of payment to be imprisoned with or without hard labor for any time not exceeding six months.

The act referred to is filed in the Department.

**Sewerage of Barcelona.**—Under date of September 5, 1894, Consul Herbert W. Bowen reports that the sewer system of Barcelona is in every respect unworthy of serving as a model, as it is antiquated, unscientific, and almost incredibly tolerant of mephitic odors. To describe it, therefore, would be unprofitable, especially as public opinion is already demanding that it be modernized, and doubtless the first steps to effect the change will be taken within a very short time. (For a series of reports on "Sewerage in Foreign Cities," see CONSULAR REPORTS No. 173, February, 1895.)

**American-Spanish Trade.**—Under date of January 5, Consul Herbert W. Bowen reports as follows:

There is every likelihood that our exportations to Spain will continue to increase, but they will be principally to Barcelona; and it is also likely that Barcelona's exportations to the

United States will increase; but the exportations from the rest of Spain to the United States will doubtless keep on diminishing, as they are principally wine and fruit, both of which are being gradually driven out of our markets by the wine and fruit of California.

The principal imports at Barcelona from the United States are cotton, petroleum, and staves, these amounting to about \$15,000,000 annually. The exports from Barcelona to the United States are increasing steadily, amounting to \$512,832 in 1894, against \$227,170 in 1891.

I keep the schedule of Spanish duties in the consulate, and I am always glad to answer any letters regarding them that our exporters address to me. I also have a list of agents who are willing to represent American houses, and who hold themselves ready to furnish satisfactory references on demand, and I advise our exporters to make use of them, as they speak and write English, know the market and the peculiarities of the custom-house, and can prevent fraudulent claims for damage from being urged.

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**Spanish Exchange and American Trade.**—Under date of January 5, Consul Herbert W. Bowen, of Barcelona, writes as follows:

Exchange, which began to be against Spain in 1890, and which rose during the early part of 1894 to as high as 23 per cent, has, since September, 1894, been steadily falling and is now at 10½ per cent. The money in circulation in Spain is paper, silver, and copper, and these are on a par, and all prices are quoted in them. Spanish gold is at a premium, and it is practically out of circulation. The premium varies according to the kind of gold. Thus to-day it is as follows per cent: Centenes Alfonso, 9; centenes Isabelinos, 13; Monedas de 20 pesetas, 9½; Onzas, 10½; Oro pequeño, 7½; French gold, 11½; pounds sterling, 11¼. There are no quotations of the value of the United States dollar. There is, therefore, some difficulty in reducing Spanish silver or paper to its equivalent in United States gold, but it can be most accurately done by reducing it to the equivalent in Spanish gold, which, according to bankers' estimates, is at a premium of 1 per cent less than French gold. Thus, as French gold is to-day at a premium of 11½, Spanish gold should be reckoned at 10½ per cent. Having found the equivalent of Spanish paper or silver money in Spanish gold, all that remains is to reduce the amount to United States gold by valuing the gold peseta at 19.3 cents. To value the silver or paper peseta at 19.3 cents is to lose 10½ per cent, and that is a very important fact for our exporters to keep in mind, as Spanish buyers are always anxious to make that profit when they can. Bankers with whom I have talked are of the opinion that the exchange will fall as low as 6 per cent, and then rise to 16 per cent and remain there, or thereabouts, for some years to come.

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**Barranquilla-American Trade.**—Consul John Bidlake reports that the exports from Barranquilla to the United States for the quarter ending December 31, 1894, are greater by the sum of \$183,243.45 than during the previous quarter, the exports for the quarter ending September 31, 1894, being \$585,330.61, against \$768,576.06 for the quarter ending December 31, 1894.

"A marked difference was noticeable at once on the taking effect of the new tariff regulations. Business for the new year promises well. On January 8, I dispatched the Atlas Line steamer *Alenc*, which carried \$168,270 worth of coffee and hides for the United States, and I am assured that the next shipment will be heavier."

**The Carrying Trade of the Tyne.**—Under date of January 18, Consul William S. Campbell, of Newcastle, reports :

In connection with the matter of the present small participation of our flag in the carrying of our products, it may be of interest to note the experience in this consular district alone during the past year. At Newcastle, and at the agencies at Sunderland, Hartlepool, and Carlisle, 437 bills of health were issued to foreign vessels bound to the United States, divided as follows: Newcastle, 311; Sunderland, 75; Hartlepool, 48; Carlisle, 3. They were mostly in ballast, and bound to ports all the way from Boston to Galveston in pursuit of cargoes of our own products. Of these, 402 were British, and 35 were under various continental flags, and, with the exception of 11 sailing vessels, all were steamers averaging upwards of 2,800 gross tons each.

Of the whole number, 130 put into the Tyne on the voyage from various continental ports, for "bunker coals" only, and consequently would figure in any statement that might be made at those ports.

During the same period, but one American vessel—a sailing ship of 1,572 tons—arrived in and departed from this consular district.

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**Extraction of Fiber from Ramie.**—Under date of September 7, 1894, Consul-General Pratt, of Singapore, reported upon a new process for the extraction of fiber from the ramie plant (see CONSULAR REPORTS No. 170, November, 1894, p. 420). A sample of the prepared fiber, transmitted by Consul-General Pratt, was turned over to the Department of Agriculture for examination, and the following communication reporting the result of such examination has been received :

The sample of ramie has been duly examined by the fiber expert of the Department, and reported upon as follows :

The sample seems to have been properly degummed, but from having been broken into very short lengths, it could only be employed in wool mixtures, and to that extent would be used as an adulterant. Properly degummed ramie—by such processes as the Favier in France, the Boyle Fiber Syndicate in London, and the Forbes Company in the United States—is kept straight, in full length, is perfectly white, and in this form is adaptable to any use and can be spun in any form of goods, while a product like the sample under consideration is only fit for one use, even if the process could be employed with profit in this country. The use of a boiling process to strip the fiber of ramie in any country save those where labor is very cheap, is not considered profitable, as the stripping, after boiling, must be accomplished by hand. Ramie will thrive in this country along the line of the Gulf States and in California, and would have become an industry ere this but for the want of an economical process for securing the fiber for market.

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**Electric Carbons.**—Under date of November 10, 1894, Consul William J. Black, of Nuremberg, transmits a report upon the manufacture of electric carbons in Germany, from which it appears that they are made of a mixture of gas-retort carbon (the hard incrustation which is found sublimed in gas retorts), tar soot, and refined gas tar. Pine soot is also sometimes used. Gas-retort carbon is obtained from gas works, where retorts are cleaned every two months; tar soot is produced almost entirely at Cologne, and gas tar can be had from the various refineries of that article.

Gas retort carbon, procured in large pieces, is reduced to a powder and mixed with tar soot and gas tar, until the whole becomes a clayey mass, which is made more compact by stamping hammers in cylinders about 12 inches high and 9 to 10 inches diameter. The block thus obtained is placed in the breech of a cylinder, its own size, and by powerful pressure, forced through a smaller cylinder, coming out into a stick of the requisite diameter. Such sticks are then broken into certain lengths. The smaller cylinder is wrapped with coils of pipe containing steam in order to soften the mass so as to permit its compression. The carbon rods are then placed in stone crucibles—forty or one hundred in a crucible according to thickness—and subjected to intense heat. When sufficiently burned—in five or six days—the rods are taken from the crucibles and cut into sticks of required size. Some rods are homogeneous or solid, while others have a small hole through the center, which is filled with a mixture of water glass and gas retort carbon. This filling, inserted after the burning, is moist at first, and is dried by placing the carbons in a warm furnace.

The price of the raw materials, per 100 kilograms (220.46 pounds) is as follows: Gas retort carbon, \$1.19; tar soot, \$6.66 at factory, including casks, with 2 per cent off for cash, or \$6.96 free on board at Rotterdam; refined gas tar, \$1.90.

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**New Cabinet in Haiti.**—Minister Henry M. Smythe reports, under date of Port-au-Prince, December 28, that the "cabinet crisis" was terminated on the 9th by the official announcement of an entirely new ministry, as follows: Calisthene Fouchard, finance; B. Prophete, public works and agriculture; M. Papillon, interior; M. Labidon, public instruction; T. Simon Saum, war and marine; P. Faine, justice and foreign relations. Among foreign residents and the business community, the new cabinet is considered especially strong, and from its personnel, geographical selection, and the progressive spirit credited to its members gives unusual promise of success. The nomination of Mr. Fouchard as Minister of Finance is regarded as a pledge for the rehabilitation of the Treasury on a better basis, and this is emphasized by an immediate decrease of 4 per cent in the price of exchange. The new Minister of Foreign Relations was a long time a commissaire of the Government, and has recently been a merchant in Port-au-Prince. He is regarded as a clear-headed man of business.

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**New Cabinet in Chile.**—Under date of Santiago, December 10, the secretary of the United States legation, Mr. Owen McGarr, reports that a new ministry was announced on the 7th instant, and it has since been duly installed at the Moneda. The Cabinet is liberal, and is composed as follows: Ramon Barros Luco, minister of the interior and chief of the cabinet; Luis Barros Borgono, foreign relations, worship, and colonization; Osvaldo

Renjifo, justice and public instruction; Manuel Salustio Fernandez, hacienda (treasury); Carlos Rivera Jofré, war and marine; and Elias Fernando Albano, industry and public works.

**Cipher Telegrams in Nicaragua.**—Minister Lewis Baker, under date of Managua, December 10, reports that the President of Nicaragua issued a decree regarding the transmission of cipher telegrams over the national lines. This decree forbids the transmission of messages over the national telegraph lines in cipher, signs, or combinations without the previous registration with the director-general of telegraphs of an exact and authorized copy of the key to such cipher. The law took effect on the 1st of January. All cables from either Costa Rica or this capital to the United States must pass through the Nicaraguan office at San Juan del Sur.

**Foreigners in Honduras.**—Consul Burchard, of Ruatan, under date of December 21, sends the Department the following extracts from chapter 3 of the new constitution of Honduras, which will take effect January 1, 1895:

ARTICLE 10. The Republic of Honduras is a sacred asylum for every person who may take refuge in its territory.

ART. 11. Foreigners are obliged from the time of their arrival in the Republic to respect the authorities and obey the laws.

ART. 12. Foreigners in Honduras enjoy all the civil rights of Honduraneans.

ART. 13. They can acquire any kind of property in the country, but they shall be subject, in regard to such property, to all the ordinary taxes or obligations (*Cargas*) and to the extraordinary of a general character to which Honduraneans are obligated.

ART. 14. They (foreigners) can not make reclamations, or demand any indemnity from the Republic except in the cases and in the form that Honduraneans might do it.

ART. 15. Foreigners can not have recourse to diplomatic intervention (*via Diplomática*) except in cases of denial of justice. To this effect a judgment or sentence (*fallo ejctitoriado*) not favorable to the claimant shall not be understood as a denial of justice, and if, in opposition to this article, reclamations are not concluded in a friendly manner and cause damage to the country, they (the claimants) will lose the right to remain (*habitar*) in the country.

ART. 16. Extradition can only be decreed by virtue of a law or by treaty for common crimes, never for political offenses, although as a consequence of such a common crime may result.

ART. 17. The laws will establish the forms and cases by which the entrance of a foreigner to the territory of Honduras may be denied, or his expulsion ordered when considered pernicious.

ART. 18. The laws and treaties will regulate the use of these guaranties without diminishing or altering them.

ART. 19. The provisions of this chapter will not modify the treaties existing between Honduras and other nations.

**American Enterprise in Persia.**—Vice-Consul-General John Tyler, of Teheran, under date of October 25, 1894, reports to the Department that an

American citizen holds concessions for drilling artesian wells for irrigation purposes throughout Persia, and for the introduction of electricity in its various forms, outside of telegraphy—which already exists—into that country. The concessionnaire has not, however, been able to secure sufficient capital to push these enterprises to a successful issue.

**Luxemburg Railways.**—Under date of December 14, Vice-Commercial Agent George H. Murphy reports:

A bill is before the Luxemburg Chamber of Deputies, which has for its object the granting of a concession to the Prince Henri Railway Company, authorizing the establishment of railway connection between the towns of Luxemburg and Péttingen. The construction of this line will facilitate communication between Luxemburg and Paris. The new line will be about 12 miles in length, and will be owned and operated by the Prince Henri Railway Company.

It is said that after the Luxemburg-Péttingen road is completed the distance from Paris to Berlin via Luxemburg will be only about 50 miles more than by the direct line which passes through Belgium and the German cities of Aix la Chapelle, Cologne, and Hildesheim. It is, however, not probable that in times of peace the new line will have much importance, so far as communication between the cities of northern France and northern Germany is concerned, but for the traffic between France and central and southern Germany the new line will surely be very important if good connections be made and if fast through trains be provided.

The distance from Trier to Paris, via Luxemburg-Esch-Longwy, is said to have been 285 miles at the beginning of the year 1894. On May 1, 1894, the distance was reduced to 276 miles through a small straightening of the line in France. After the Luxemburg-Péttingen road is completed, Trier will be 265 miles from Paris, and the distance will be correspondingly reduced for many other towns in Germany.

If the proposed direct French railway from Rheims to Montmedy is ever completed, a further very considerable shortening of the distance will be effected, which will secure the success of an international line passing through Luxemburg. A minor advantage which the Luxemburg route would enjoy over its great northern competitor would arise from the fact that the trains would pass directly from France into the territory of the German customs union, thus saving the public delay and inconvenience at a Belgian custom-house.

**Cattle Fairs and Prices in Luxemburg.**—Under date of January 2, Vice-Commercial Agent George H. Murphy reports:

I have the honor to make a brief report relative to the cattle fairs held in the town of Luxemburg in the year 1893. While the number of animals sold in Luxemburg may be of no direct interest, it has occurred to me that the information given in regard to the prices which the different sorts of animals command in this part of central Europe may be found interesting and perhaps useful. At the thirteen cattle fairs held in the city of Luxemburg in the year 1893, there were exposed for sale 2,000 horses of the average value of \$80 to \$140; 7,150 horned cattle, \$24 to \$90; 2,300 calves, \$8 to \$12; 4,100 sheep, \$3 to \$7; 218 goats, \$4 to \$6; 23,050 hogs and pigs, \$3 to \$6. The price of fattened hogs was 24 to 30 cents per kilogram (2.2046 pounds).

**Lumber in Quebec.**—Consul Philip B. Spence, of Quebec, under date of January 8, transmits a circular prepared by J. Bell Forsyth & Co., showing

the supply, export, and stock of timber and deals at that port in 1894, from which the following extracts are given. The figures cover up to December 1.

Description.	Supply.	Export.	Stock.
White Pine:	<i>Feet.</i>	<i>Feet.</i>	<i>Feet.</i>
Square.....	838,246	3,468,600	{ 1,656,993 1,610,571
Waney.....	2,288,663		
Red pine.....	59,835	146,120	282,084
Oak.....	1,276,869	937,840	699,205
Elm.....	528,761	128,830	244,145
Ash.....	183,626	134,929	99,659
Birch.....	131,191	129,920	13,242
Pine deals.....	647,408	479,700	63,624
Spruce deals.....	3,447,856	3,462,800	579,774
Total.....	9,402,435	8,948,789	5,249,297

The circular says:

We note with regret a continued decrease in the business of the port. The growing scarcity of some descriptions of timber, and the advanced cost of others, have reduced the supply on the one hand, and limited the export by diminishing the consumption on the other.

The concession of the use of steam in taking on board timber, obtained by the shipping merchants from the ship laborers, in connection with steamers, has resulted in the transfer of an increased proportion of the export carrying trade from sail to steam, and has to some considerable extent checked the tendency to send timber from Montreal by steamer in preference to shipping from Quebec.

The market this season for South American lumber has been fairly active, both direct from the Province of Quebec, and via Portland, Boston, and other North American ports. From the ports of the maritime provinces the spruce trade to the Argentine Republic has been unusually active, and from Montreal heavy shipments of pine to same destination were made near close of season. Prices range as follows: Spruce \$11 to \$13.50 per 1,000 feet B. M., according to specification; pine, \$17.50 per 1,000 feet B. M. for common, to \$50 for clear.

Owing to the depression in the United States, the lumber market there has not been as good as expected, still all good lots of spruce suitable for that market have realized about the same price as in 1893, and manufacturers expect an increase of at least \$1 per M. for the 1895 cut.

Freights opened at about 16s. Clyde, and 18s. Liverpool, for sail from Quebec, and at 40s. for deals by steam from Montreal. Timber rates remained without any change till advanced insurance toward end of season prevented timber shipments except by steam, for which the rates ruled from 62s. to 70s. per Petersburg Standard intake, according to port of discharge. Steam freights from Montreal were greatly depressed during the greater part of the season, and for some time, rates previously unheard of, such as 30s. for Glasgow, Avonmouth, and Liverpool, with 35s. for London, were current, closing at some advance, especially for Liverpool.

Lemons and Oranges in Palermo.—Under date of January 31, Consul William H. Seymour reports that lemons are not as abundant in the consular district of Palermo as in former seasons, and that the fruit is only of medium size and medium quality. The prices are low, varying from \$1.50 to \$3 per thousand on the tree. The orange crop this season is fairly good in quantity and quality. Prices for oranges on the tree run from \$2.50 to \$5

per thousand. The destruction of the Florida crop has caused an advance of 50 per cent in the price, with a decided upward tendency, which has been accelerated by the recent severe weather.

**Argentine Tariff Changes.**—Under date of January 10, Minister William I. Buchanan informs the Department that the tariff changes given in CONSULAR REPORTS No. 173 (February, 1895), p. 290, have been incorporated into the bill as it became a law, with the exception of canned goods, which are rated at 15 cents per kilogram (2.2046 pounds). Minister Buchanan adds:

I feel sanguine that modifications will be more easily secured in next year's tariff than they have been in this. I am especially desirous that our canned goods trade may be extended to this country, and shall look after that subject when the next tariff is discussed.

**Swiss Exposition**—Under date of February 1, Consul Germain, of Zurich, writes as follows:

I am in receipt of advance sheets containing a copy of my report on American products and manufactures in Switzerland, to be printed in the January number of CONSULAR REPORTS, and I notice that I made error in stating that the Federal exposition would open on May 1, 1895. It should read May 1, 1896. Kindly cause this correction to be made known.

**Consular Reports Reprinted Abroad.**—In CONSULAR REPORTS for January and February, 1895, pages 136 and 302, respectively, mention is made of a number of reports from United States consular officers reprinted from its pages by the London Board of Trade Journal. The February number of that publication contains (p. 155), under the heading "The Commercial Situation of France," a portion of the report of Commercial Agent Angell, of Roubaix, entitled "Recent Commerce of France," which appeared in CONSULAR REPORTS No. 172. (January, 1895), p. 20.

**Consular Reports Transmitted to Other Departments.**—The following reports (originals or copies) were transmitted during the month of February to other Departments for publication, or for proper action thereon:

Consular officer reporting.	Date.	Subject.	Department to which referred.
E. Schneegans, Saigon.....	Dec. 29, 1894	Rice market.....	Department of Agriculture.
Do.....	Jan. 12, 1895	.....do.....	Do.
Do.....	Jan. 31, 1895	.....do.....	Do.
H. J. Sommer, Bombay.....	Jan. 4, 1895	Crops.....	Do.



## FOREIGN REPORTS AND PUBLICATIONS.

**Commercial Inspectors in France.**—With reference to the usefulness of a proposed corps of commercial inspectors in France, the *Revue du Commerce Extérieur* (Review of Foreign Commerce) of Paris, of December 29, says:

The functions of these officials should be to observe in the market the condition of production and the needs of foreign consumption; to study the original materials available for use in France and to stimulate the importation of them; to inquire directly into the past and present situation of French commerce in their inspection districts in order to prepare for its development. Actually, they might even be entrusted with rectifying the absurd ideas as to the prohibitory character of French customs tariffs. In a word, the commercial inspectors should, when abroad, make observations on the spot, and by entering into oral relations with the wholesale merchants and with the principal manufacturers, prepare the way for French exporters or foreign exporters resident in France—not competitive ones, of course.

What would they have to do in France? Their journeys and their stay abroad could not be permanent, since their work could only have a general bearing. On returning to France, their activity ought not to be limited to editing a report for publication in the *Moniteur Officiel du Commerce*, or in the *Bulletin Consulaire*. No doubt they will have to give account of their missions, and to publish the results of their observations. The collection of these reports will be a source of useful and interesting information. More than one error as to the causes of the success of our rivals will no doubt be dispelled. But in France, also, their mission will be, in the main, an active one; it will not be office work. What they learn outside by word of mouth, they will endeavor to teach in the same way in the commercial centers. They will be thoroughly acquainted with our rivals. Without confining themselves to the secondary branches, they will travel through the manufacturing centers which have a chance of developing their exports in their district of commercial inspection. The one who has traveled over India will not go to Elbeuf or to Sedan to teach manufacturers of cloths. They could dispose of so few in India. The inspector will go to Rouen and visit the factories and inquire into the fabrication of printed cottons, the exportation of which might be possible. Experience having been gained, he will, later, impart the results to the importers of Bombay on his next inspection tour. His double voyage will enable him to dispel the general or particular illusions of foreign importers or French exporters in regard to Rouen manufactures. He will be able to transmit the names of merchants and manufacturers, opening the way for direct relations. But, in such case, he can only take notice of first-class houses, and then by way of exception.

The travels of the consuls in France, such as have been indicated by the Minister of Foreign Affairs, will serve as a useful conclusion. The inspectors will attend to the outlines, the consuls to the details, relative to a single country or to a single consular circuit.

The missions of the inspectors can only bear fruit after the completion of two or three tours in France, as well as abroad, which are, as it were, inseparable, and mutually complete each other by allowing the commercial inspector to refute the objections raised by purchasers or by the eventual suppliers.

The inspector ought to be equally in direct relation with the principals of the great commercial systems, the directors and assistant directors of domestic and foreign trade. He will state to them verbally, information which it is not always practicable to make public. He will likewise be able to confer with the bureau and with the members of parliamentary customs commissions, with the heads of the administration of customs, with the diplomats interested in negotiating treaties and conventions of commerce or navigation. His private observa-

tions regarding the economic tendencies and the character of foreign ministers and officers in charge of commercial services, will likewise be received orally. They will advantageously complete those of ambassadors and ministers plenipotentiary directed particularly to consider their purely political side.

Let us sum up the duties of commercial inspectors. Their function is to be threefold abroad—they are to look after, to prompt, and direct the consuls in their commercial duties; they are to make direct inquiry of administrations and individuals concerning all general questions relative to the international commerce of France, for the purpose of maintaining and developing our exchanges, and at the same time, necessarily, they are to defend our economical interests, differing less than is thought from those of the foreign countries they have traveled in. They are to transmit to the national producers and merchants the result of their researches, while at the same time collecting in France information quite as serviceable to the success of their mission; they are to enlighten the faith of the high government, legislative, and administrative personnel upon the means to increase the economical influence of France, and they are to be the appointed collaborators of diplomats for the preparation and negotiation of treaties and agreements having an economic character.

Thus considered, the duties of the commercial inspectors require personal qualities and attainments that are not the portion of the mediocre. The inspectors are to be, in short, the *missi dominici* of the commerce and industry of France. Charlemagne did not select titled or incapable persons to correct abuses and instruct him as to what was taking place in his vast Empire.

As to the commercial attachés connected with the consulates, we do not understand their utility. They can only do service on extremely special occasions. Such are the wine expert delegates from Spain, a country where the exportation of wine rules the whole international commerce of the country. Such, in a less degree, if they were necessary, are Chinese or Japanese delegates, experts in the matter of silks, the chief produce of Chinese or Japanese exportation, if competition should arrest their prestige. But in France, the commerce of important products (there is no dominating one) is already too advanced and too well known over the globe for the cooperation of official specialists to be necessary or even useful.

The general prosperity of our exportation does not depend upon a single product, like coffee in Brazil, wine in Spain, silk and tea in the far east. Our great industries of wool, silk, and wine are self-protecting. If these were developed, even simultaneously, the fortune of the country would nevertheless be compromised, if there were an ever increasing decline in the other merchandise which forms the greater part of our exportation. And it is impossible for one man to know thoroughly the three principal branches of our commerce. There can therefore be found and employed to increase our exchanges but a small number of men gifted with knowledge and general aptitude in a maximum degree. This is why, instead of extolling the appointment of a hundred commercial attachés, who, for the most part, would be useless, we only ask for the successive nomination of, at most, ten commercial inspectors. The qualities that would be necessary to require of them render their recruiting sufficiently difficult. But those to be chosen—and there are some whom we could cite of our consular personnel—would do more efficient service than any number of commercial attachés, a useless substitute for consuls on duty.

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**The Manchester Ship Canal.**—In a review of the operations of the Manchester Ship Canal for the first year of its existence, the London Times of January 9, 1895, says no criticism could shake the main conclusion arrived at in a previous article—

Namely, that whatever may be the benefits to other people now being, or likely to be, derived from the canal as a channel of transport, the Manchester Ship Canal Company as a commercial undertaking has at present reaped none of them, and appears to have very little

prospect of so doing for many years to come. There can be no doubt that the outlay involved in the undertaking has already vastly exceeded even the highest of the early estimates; that further capital expenditure is urgently necessary if the canal is to be put in a position at all to realize the expectations of its original promoters; that, apart from this, maintenance charges, at any rate for some years to come, will be very heavy, and that so far is the present revenue from being adequate to meet such charges or even to pay working expenses, that on the first year's operations it is not much more than sufficient to pay interest on the first 4 per cent debentures, not to mention the £5,000,000 corporation loan, least of all the £8,000,000 of ordinary and preference stock which is held by the unfortunate stockholders in the undertaking.

As a set-off to this gloomy picture of their position and prospects, there seems to be only one point that can be made with effect by those whose concern it is to defend the canal, and that is that eleven months or a year is a very short time to make the criterion of a verdict on an enterprise of this nature. This point is no doubt a good one so far as it goes, but it appears to go only so far as to explain in part why the concern is at present so dismal a failure financially, and, when given all the weight it deserves, it suggests little hope of future recoupment, at any rate to the present generation of shareholders in the undertaking. Next to the huge excess—one and a half times as much again—of actual outlay over estimate, and the consequently heavy overcapitalization of the company, the most fruitful cause of the present crisis in its affairs has been the immense—and, as far as one can judge, quite unforeseen—difficulties which have been experienced in inducing trade to flow along the new channel it has provided, and this notwithstanding that it has faithfully fulfilled its original programme of offering substantial inducements in the way of reduced rates. The fact is—to put the matter as nearly in a nutshell as is possible—that the promoters of the enterprise originally thought that they had only got to make a ship canal; they have found, or more accurately, those who have entered into their labors have found, that in order to make the canal of any real service they have got to create a port also.

\* \* \* \* \*

As a resort and headquarters for shipping, Liverpool has behind it the experience and prestige of centuries; in the facilities it offers as a modern trading port it represents the adaptation and evolution of years. But, to satisfy the sanguine hopes of some of its friends, and to meet the hasty detractions of many of its critics, Manchester must have repeated the miracle of the Creation in Eden and come into existence full-grown.

The Times gives many interesting details of the great warehousing and terminal facilities, the railway connections, the powerful vested interests, and the far-reaching business associations which give Liverpool so great a superiority over her would-be rival.

For reports on the Manchester Canal, see CONSULAR REPORTS No. 166 (July, 1894), p. 499, and No. 169 (October, 1894), p. 197. In a subsequent report, dated January 31, 1895, Consul Grinnell, of Manchester, says:

Arrangements are forward which will soon result, it is stated, in the dispatch of cargoes of the manufactures of this district to India, China, and, perhaps, to South America. Hitherto, these goods have been put on board at Liverpool.

Of the vessels arriving during the six months from July 1 to December 31, 1894, adds Consul Grinnell, there were:

From United States ports—10 vesse's, total tonnage, 12,864; average, 1,286.

From all other ports—272 arrivals, 116 vessels, as follows: Other ports, American continent, 11; French ports, 57; Netherlands ports, 52; German ports, 35; Spanish ports, 33; Belgian ports, 26; all other ports, 58.

Total foreign arrivals, 282; total tonnage, 66,226; average, 571.

**Foreign Trade of the United Kingdom.**—The following statistics, showing the imports and exports of the United Kingdom for the month of January, in 1894 and 1895, are compiled from British official returns:

Articles.	Month of January—		Increase.	Decrease.
	1894.	1895.		
<i>Imports.</i>				
Live animals (for food).....	\$2,329,816	\$2,310,007		\$19,809
Articles of food and drink :				
Duty free.....	55,480,581	57,769,823	\$2,289,242	
Dutiable.....	9,534,893	9,492,131		42,762
Tobacco, dutiable.....	852,567	1,107,132	254,568	
Metals.....	8,403,436	7,806,032		597,404
Chemicals, dyes, and tannics.....	3,712,562	2,522,437		790,125
Oils.....	3,237,554	3,293,679	56,129	
Raw materials for textiles.....	57,823,782	46,836,383		10,987,399
Raw materials for other industries.....	13,391,835	13,136,044		255,791
Manufactured articles.....	25,132,817	27,657,930	2,525,113	
Miscellaneous articles.....	7,948,606	5,882,250		2,066,356
Parcel post.....	290,758	626,566	335,808	
Total.....	188,139,207	178,840,414		9,298,793
<i>Exports.</i>				
Animals, living.....	\$113,261	\$185,329	\$72,068	
Articles of food and drink.....	3,838,276	3,558,973		\$279,303
Raw materials.....	8,363,486	6,367,176		1,996,310
Manufactured and partly manufactured goods :				
Yarns and textiles.....	43,198,017	44,867,836	1,669,819	
Metals and metal goods.....	10,110,648	9,895,488		215,160
Machinery and millwork.....	4,707,947	5,556,815	848,868	
Apparel and personal articles.....	4,044,186	3,809,261		234,925
Chemicals and medicines.....	3,507,019	3,224,538		282,481
All other manufactures.....	10,065,511	10,805,541	740,030	
Parcel post.....	382,181	408,175	25,994	
Total British goods.....	88,330,552	88,679,132	348,580	
Foreign goods.....	21,150,765	18,915,397		2,235,368
Total exports.....	109,481,317	107,594,529		1,886,788

**The Hungarian Commercial Museum.**—The *Revue du Commerce Extérieur*, of December 29, in continuation of its series of reports upon commercial museums of foreign countries, of which a synopsis was given in CONSULAR REPORTS No. 173 (February, 1895), p. 303, says:

Consequent upon an order of His Excellency the royal Hungarian Minister of Commerce, the permanent exposition of indigenous products organized at the commercial museum of Budapest is on the point of being broken up for two years. The Palace of Industry, where the exposition of 1885 was installed, is appropriated to several collections of the Hungarian exposition of 1896, and the necessary work of adaptation will be commenced at once. Until the close of the year 1896, the bureaux of the commercial museum will be placed in a temporary building where the management counts upon realizing its original plan, which permitted the establishment of a collection of samples of goods that are sold in the East. The Hungarian Society of Commerce has charge of the services claimed by the Hungarian exporters, viz, to show how to collect orders, to cash drafts drawn for payment of deliveries made, to advance security in cases of supplies to eastern offices, etc. The museum publishes a

weekly organ of commercial information (*Kereskedelmi Közlönyek*), which is gratuitously sent to four thousand interested parties. The museum has agencies at Fiume, Sarayero, Mostar, Banjaluka, Broka, Belgrade, Sophia, Philippopolis, Roostchoock, Salonica, Constantinople, and Bucharest. There is talk of establishing them at Kiev, Marseilles, Alexandria, Aden, and Bombay.

**Tariff Changes.**—The Board of Trade Journal of London, for February, 1895, announces the following tariff changes:

*Russia.*—By a decree of January 9, the Russian Government increases the import duties on cotton and cotton yarn. The new duty on raw cotton is 2 rubles 10 copecks (gold) per pood, the pood being given as 36 pounds avoirdupois, and the gold ruble as equal to 3s. 6d. or 85 cents. Included under this head, are ends of cotton yarn and cotton combings. The duties (in gold) on cotton yarn are (article 183):

- (1) Inferior numbers up to No. 38 (English):
  - (a) Unbleached, 4 rubles 80 copecks per pood.
  - (b) Bleached and dyed (excepting those dyed turkey red), 6 rubles per pood.
  - (c) Dyed turkey red, 6 rubles 30 copecks per pood.
- (2) From No. 38 to No. 50 English, not including the last number:
  - (a) Unbleached, 6 rubles per pood.
  - (b) Bleached and dyed, 7 rubles 10 copecks per pood.
- (3) Numbers higher than No. 50 English:
  - (a) Unbleached, 8 rubles 50 copecks per pood.
  - (b) Bleached and dyed, 9 rubles 60 copecks per pood.

On the exportation of native cotton products by the European frontier, as well as by that of Persia, by sea and by the land frontiers of the transcasian and transcaucasia, the import duties paid on the materials used for the finishing of these products will be repaid in the following proportions:

- (1) For yarn and tissues not bleached and bleached, 2 rubles 30 copecks per pood.
- (2) For yarn and tissues dyed and designs printed, such as yarn and tissues dyed turkey red, 2 rubles 45 copecks per pood.
- (3) Yarn and tissues dyed turkey red, 2 rubles 80 copecks per pood.

*Sweden.*—Sir S. St. John, British minister at Stockholm, in a dispatch to the Foreign Office, dated the 10th of January, states that the Swedish Government has issued a decree raising the import duties on grain by 150 per cent. The increased rates of duty were to be imposed immediately. In his speech at the opening of the Rigsdag at Stockholm, on the 17th of January, King Oscar assigned the reason for this increase as being the decrease in price in Sweden which has affected almost all agricultural products, and, first and foremost, grain.

**Commercial Travelers in Russia.**—Sir F. C. Lascelles, British ambassador at St. Petersburg, in a dispatch to the Foreign Office, dated the 3d of January (Board of Trade Journal, February, 1895, p. 196), incloses the following translation of certain temporary rules issued by the Ministry of Finance regarding the admission into Russia of foreign commercial travelers and their wares:

The Minister of Finance has established the following temporary rules, which have been published, relating to foreign commercial travelers in Russia:

These travelers, on arrival in Russia, must provide themselves at the first frontier Russian custom-house reached by them with a clerk's certificate of the first class, paying for the same

on the established scale, viz, 38 rubles 50 copecks. This certificate, prior to the commencement of commercial transactions, must be exhibited at the treasury offices or to the inspector of taxes of the locality which the commercial travelers will first visit. In the Grand Duchy of Finland, pending ulterior regulations, no trading tax is payable by commercial travelers.

Dutiable articles imported as samples of goods by commercial travelers may enter the country duty free, on condition that, if not sold, they are reexported within six months of their importation.

Foreign commercial travelers of the Jewish persuasion, duly registered as such travelers by commercial firms, according to the laws of the country of the latter, must present their passports for visé to Russian consuls, and at the same time exhibit certificates of their calling to be issued by the firms they represent. A note shall then be made by the consular officers on their passports to the effect that the bearer is a commercial traveler, the number of his legitimization certificate being also indicated thereon, together with its place of issue.

During the term for which the passport is valid, and during six months when the passport has been issued for an unlimited period, a foreign Jew may cross and recross the Russian frontier while observing the general regulations established for the purpose.

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**Amsterdam Exposition.**—The *Revue du Commerce Extérieur* of Paris, January 12, 1895, says:

The *Journal Officiel*, of November 18, has announced the Amsterdam World's Exposition in 1895, and the *Moniteur Officiel du Commerce*, of the 15th of the same month, published its regulations. The participation of France in this exposition is being prepared for. An honorable committee, composed of high Parisian notabilities, has been appointed.

In view of the great interest which the exposition offers our country, an industrial patronage committee is in course of formation, which will include members from Paris and the provinces. As Holland and its colonies offer great markets to French commerce, we think we may now predict that, as in 1883, France will occupy the first rank at the exposition at Amsterdam in 1895.

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**North German Exhibition.**—A communication dated January 12, has been received at the London Board of Trade from Herr Hermann Lange, president of the North German Exhibition for Commerce and Industry (*Deutsch-Nordische Handels- und Industrie- Ausstellung*), proposed to be held at Lubeck from July 1 to September 30, 1895.

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**Bordeaux International Exhibition.**—Mr. W. Ward, British consul at Bordeaux, France, in a report to the Foreign Office, dated January 20, states that the latest date on which applications for space by intending exhibitors will be received by the executive committee of the exhibition at Bordeaux has been extended to February 28, 1895. (*Board of Trade Journal*, February, p. 197.)

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**Metric System in Tunis.**—The *Journal Officiel Tunisien*, in its issue for January 18, publishes a decree of the Bey of Tunis, providing that from March

1 next, the decimal system of weights and measures shall be solely employed over the whole extent of Tunis as regards the weights and measures. (Board of Trade Journal, February, p. 201.)

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**Railway Construction in Russia.**—The Journal de St. Pétersbourg, in its issue for December 23, says the same authority quoted above, p. 206, refers to the question of a project framed by the Russian Ministry of Finance, and to be examined by the imperial council, the object of which is to provide Russia with a system of railways of exclusively local interest and requiring the construction of 30,000 versts of lines. The reasons for this large construction are too well known to require lengthy reference; the insufficiency and bad state of the roads are commented upon repeatedly in the daily press, in which is to be seen one of the chief causes of the abnormal state to which the grain trade is now reduced.

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**Railways and Telegraphs in South Africa.**—The African Review, of London, February 2, 1895, quotes the British and South African Export Gazette as saying of the schemes on foot for the construction of light railway "feeder" lines in South Africa, that they must have the warmest sympathy of every one who is interested in the development of that country. "So far as financial methods go," adds the Export Gazette, "we are in favor of the guaranteeing by the Government and the local authorities between them of a small interest upon the cost of construction. This, we believe, is the form in which the Long Kloof and other similar proposals will receive Parliamentary assent." South Africa, of London, in its issue of the same date, quotes the chief constructor of the African transcontinental telegraph as stating that, by June next, the line will be completed to a point 400 miles beyond Salisbury. The general direction is northeastwardly toward Lake Nyassa.

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Full directions for binding the Consular Reports are given in No. 131, page 663.

## VALUES OF FOREIGN COINS.

The following statements show the valuation of foreign coins, as given by the Director of the United States Mint and published by the Secretary of the Treasury, in compliance with the first section of the act of March 3, 1873, viz: "That the value of foreign coins, as expressed in the money of account of the United States, shall be that of the pure metal of such coin of standard value," and that "the value of the standard coins in circulation of the various nations of the world shall be estimated annually by the Director of the Mint, and be proclaimed on the 1st day of January by the Secretary of the Treasury."

In compliance with the foregoing provisions of law, annual statements were issued by the Treasury Department, beginning with that issued on January 1, 1874, and ending with that issued on January 1, 1890. Since that date, in compliance with the act of October 1, 1890, these valuation statements have been issued quarterly, beginning with the statement issued on January 1, 1891.

These estimates "are to be taken (by customs officers) in computing the value of all foreign merchandise made out in any of said currencies, imported into the United States."

The following statements, running from January 1, 1874, to April 1, 1894, have been prepared to assist in computing the proper values in American money of the trade, prices, values, wages, etc., of and in foreign countries, as given in consular and other reports. The series of years are given so that computations may be made for each year in the proper money values of such year. In hurried computations, the reductions of foreign currencies into American currency, no matter for how many years, are too often made on the bases of latest valuations. When it is taken into account that the ruble of Russia, for instance, has fluctuated from 77.17 cents in 1874 to 37.2 cents in April, 1894, such computations are wholly misleading. All computations of values, trade, wages, prices, etc., of and in the "fluctuating-currency countries" should be made in the values of their currencies in each year up to and including 1890, and in the quarterly valuations thereafter.

To meet typographical requirements, the quotations for the years 1876, 1877, 1879, 1881, and 1882 are omitted, these years being selected as showing the least fluctuations when compared with years immediately preceding and following.

To save unnecessary repetition, the estimates of valuations are divided into three classes, viz: (A) countries with fixed currencies, (B) countries with fluctuating currencies, and (C) quarterly valuations of fluctuating currencies.

*A.—Countries with fixed currencies.*

Countries.	Standard.	Monetary unit.	Value in terms of United States gold.	Coins.
Argentine Republic*....	Gold and silver....	Peso .....	\$0.96, 5	Gold—Argentine (\$4.82, 4) and ½ Argentine; silver—peso and divisions.
Austria-Hungary†.....	Gold .....	Crown.....	.20, 3	Gold—20 crowns (\$4.05, 2) and 10 crowns.
Belgium.....	Gold and silver....	Franc.....	.19, 3	Gold—10 and 20 franc pieces; silver—5 francs.
Brazil.....	Gold .....	Milreis .....	.54, 6	Gold—5, 10, and 20 milreis; silver—½, 1, and 2 milreis.
British North America (except Newfoundland)).	do.....	Dollar.....	1.00	
Chile‡.....	Gold and silver....	Peso .....	.91, 2	Gold—escudo (\$1.82, 4), doubloon (\$4.56, 1), and condor (\$9.12, 8); silver—peso and divisions.
Cuba.....	do.....	do.....	.92, 6	Gold—doubloon (\$5.01, 7); silver—peso.
Denmark.....	Gold .....	Crown.....	.26, 8	Gold—10 and 20 crowns.
Egypt.....	do.....	Pound (100 piasters).	4.94, 3	Gold—10, 20, 50, and 100 piasters; silver—1, 2, 10, and 20 piasters.
Finland.....	do.....	Mark.....	.19, 3	Gold—10 and 20 marks (\$1.93 and \$3.85, 9).
France.....	Gold and silver....	Franc.....	.19, 3	Gold—5, 10, 20, 50, and 100 francs; silver—5 francs.
Germany.....	Gold .....	Mark.....	.23, 8	Gold—5, 10, and 20 marks.
Great Britain.....	do.....	Pound sterling....	4.86, 6½	Gold—sovereign (pound sterling) and half sovereign.
Greece.....	Gold and silver....	Drachma.....	.19, 3	Gold—5, 10, 20, 50, and 100 drachmas; silver—5 drachmas.
Haiti.....	do.....	Gourde.....	.96, 5	Silver—gourde.
Italy.....	do.....	Lira.....	.19, 3	Gold—5, 10, 20, 50, and 100 lire; silver—5 lire.
Liberia.....	Gold .....	Dollar.....	1.00	
Netherlands§.....	Gold and silver....	Florin.....	.40, 2	Gold—10 florins, silver—½, 1, and 2½ florins.
Newfoundland.....	Gold .....	Dollar.....	1.01, 4	Gold—\$2 (\$2.02, 7).
Portugal.....	Gold .....	Milreis .....	1.08	Gold—1, 2, 5, and 10 milreis.
Spain.....	Gold and silver....	Peseta.....	.19, 3	Gold—25 pesetas; silver—5 pesetas.
Sweden and Norway...	Gold .....	Crown.....	.26, 8	Gold—10 and 20 crowns.
Switzerland.....	Gold and silver....	Franc.....	.19, 3	Gold—5, 10, 20, 50, and 100 francs; silver—5 francs.
Turkey.....	Gold .....	Piaster.....	.04, 4	Gold—25, 50, 100, 200, and 500 piasters.
Venezuela.....	Gold and silver....	Bolivar.....	.19, 3	Gold—5, 10, 20, 50, and 100 bolivars; silver—5 bolivars.

\* In 1874 and 1875 the gold standard prevailed in the Argentine Republic. Its currency does not appear in the statements again until 1883, when the double standard prevailed, and the peso attained a fixed value of 96.5 cents.

† On reference to the table of "fluctuating currencies," it will be seen that Austria had the silver standard up to and including the quarter ending July 1, 1892. The next quarter (October 1) inaugurated the gold standard (see note under table of "fluctuating currencies").

‡ The gold standard prevailed in Chile until January 1, 1890. The value of the peso has been the same under both standards.

§ The Netherlands florin, as will be seen in the "fluctuating" table, became fixed in value (40.2 cents) in 1880.

## B.—Countries with fluctuating currencies, 1874-'90.

Countries.	Standard.	Monetary unit.	Value in terms of the United States gold dollar—on January 1—					
			1874.	1875.	1878.	1880.	1883.	1884.
Austria-Hungary*.	Silver.....	Florin.....	\$0.47,6	\$0.45,3	\$0.45,3	\$0.41,3	\$0.40,1	\$0.39,8
Bolivia.....	do.....	Dollar until 1880; boliviano thereafter.	.96,5	.96,5	.96,5	.83,6	.81,2	.80,6
Central America.....	do.....	Peso.....	.96,5	.92,8	.91,8	.83,6		
China.....	Silver.....	Haikwan tael...	1.61	1.61				
Colombia.....	do.....	Peso.....	.96,5	.96,5	.96,5	.83,6	.81,2	.80,6
Ecuador.....	do.....	do.....	.96,5	.92,8	.91,8	.83,6	.81,2	.80,6
Egypt†.....	Gold.....	Pound (100 piasters).			4.97,4	4.97,4	4.90	4.90
India.....	Silver.....	Rupee.....	.45,8	.43,6	.43,6	.39,7	.38,6	.38,3
Japan.....	{ Gold..... Silver..... }	{ Yen..... Yen..... }	{ .99,7 .99,7 }	{ .99,7 .99,7 }	{ .99,7 .99,7 }	{ .99,7 .99,7 }	.87,6	.86,9
Mexico.....	do.....	Dollar.....	1.04,7½	.99,8	.99,8	.90,9	.88,2	.87,5
Netherlands †.....	Gold and silver.	Florin.....	.40,5	.38,5	.38,5	.40,2		
Peru.....	Silver.....	Sol.....	.92,5	.91,8	.91,8	.83,6	.81,2	.80,6
Russia.....	do.....	Ruble.....	.77,17	.73,4	.73,4	.66,9	.65	.64,5
Tripoli.....	do.....	Mahbub of 20 piasters.	.87,09	.82,9	.82,9	.74,8	.73,3	.72,7

Countries.	Standard.	Monetary unit.	Value in terms of the United States gold dollar on January 1—					
			1885.	1886.	1887.	1888.	1889.	1890.
Austria-Hungary*.	Silver.....	Florin.....	\$0.39,3	\$0.37,1	\$0.35,9	\$0.34,5	\$0.33,6	\$0.42
Bolivia.....	do.....	Dollar until 1880; boliviano thereafter.	.79,5	.75,1	.72,7	.69,9	.68	.85
Central America.....	do.....	Peso.....				.69,9	.68	.85
Colombia.....	do.....	do.....	.79,5	.75,1	.72,7	.69,9	.68	.85
Ecuador.....	do.....	do.....	.79,5	.75,1	.72,7	.69,9	.68	.85
Egypt†.....	Gold.....	Pound (100 piasters).	4.90	4.90	4.94,3	4.94,3	4.94,3	4.93,3
India.....	Silver.....	Rupee.....	.37,8	.35,7	.34,6	.33,2	.32,3	.40,4
Japan.....	{ Gold..... Silver..... }	{ Yen..... Yen..... }	{ .85,8 .81 }	{ .81 .76,4 }	{ .99,7 .75,3 }	{ .99,7 .73,4 }	{ .99,7 .73,4 }	{ .99,7 .91,7 }
Mexico.....	do.....	Dollar.....	.86,4	.81,6	.79	.75,9	.73,9	.92,3
Peru.....	Silver.....	Sol.....	.79,5	.75,1	.72,7	.69,9	.68	.85
Russia.....	do.....	Ruble.....	.63,6	.60,1	.58,2	.55,9	.54,4	.68
Tripoli.....	do.....	Mahbub of 20 piasters.	.71,7	.67,7	.65,6	.63	.61,4	.76,7

\* The silver standard prevailed in Austria-Hungary up to 1892. The law of August 2 of that year (*see* CONSULAR REPORTS, No. 147, p. 623) established the gold standard.

† The Egyptian pound became fixed in value at \$4.94,3 in 1887.

‡ The Netherlands florin fluctuated up to the year 1880, when it became fixed at 40.2 cents.



## C.—Quarterly valuations of fluctuating currencies, 1891-'94.

Countries.	Monetary unit.	1892.				1893.			
		Jan. 1.	April 1.	July 1.	Oct. 1.	Jan. 1.	April 1.	July 1.	Oct. 1.
Austria-Hungary †	{ Gold crown.....				\$0.20,3				
	{ Silver florin.....	\$0.34,1	\$0.32,8	\$0.32					
Bolivia.....	Silver boliviano.....	.69,1	.66,5	.64,9	.61,6	\$0.61,3	\$0.61	\$0.60,4	\$0.53,1
Central America.....	Silver peso.....	.69,1	.66,5	.64,9	.61,6	.61,3	.61	.60,4	.53,1
China †.....	{ Shanghai tael.....	1.02,1	.98,2	.95,8	.91	90,6	.90,1	.89,2	.78,4
	{ Haikwan tael.....	1.13,7	1.09,3	1.06,7	1.01,3	1.01	1.00,4	.99,4	.87,4
Colombia.....	Silver peso.....	.69,1	.66,5	.64,9	.61,6	.61,3	.61	.60,4	.53,1
Ecuador.....	do.....	.69,1	.66,5	.64,9	.61,6	.61,3	.61	.60,4	.53,1
India.....	Silver rupee.....	.32,8	.31,6	.30,8	.29,3	.29,2	.29	.28,7	.25,2
Japan ‡.....	Silver yen.....	.74,5	.71,6	.69,9	.66,4	.66,1	.65,8	.65,1	.57,3
Mexico.....	Silver dollar.....	.75	.72,2	.70,4	.66,9	.66,6	.66,2	.65,6	.57,7
Peru.....	Silver sol.....	.69,1	.66,5	.64,9	.61,6	.61,3	.61	.60,4	.53,1
Russia §.....	Silver ruble.....	.55,3	.53,1	.51,9	.49,2	.49,1	.48,8	.48,3	.42,5
Tripoli.....	Silver mahbub.....	.62,3	.60	.58,5	.55,5	.55,3	.55	.54,5	.47,9
Venezuela ¶.....	Silver bolivar.....	.13,8	.13,3	.13	.12,3				

Countries.	Monetary unit.	1894.				1895	
		Jan. 1.	April 1.	July 1.	Oct. 1.	Jan. 1.	April 1.
Bolivia.....	Silver boliviano.....	\$0.51,6	\$0.46,5	\$0.45,7	\$0.46,4	\$0.45,5	\$0.44,1
Central America.....	Silver peso.....	.51,6	.46,5	.45,7	.46,4	.45,5	.44,1
	{ Shanghai tael.....	.76,2	.68,6	.67,6	.68,5	.67,3	.65,2
	{ Haikwan tael.....	.84,9	.76,5	.75,3	.76,3	.74,9	.75,6
China †.....	{ Tien-Tsin tael.....				.72,7	.71,4	.69,2
	{ Chefoo tael.....				.71,7	.70,4	.68,3
Colombia.....	Silver peso.....	.51,6	.46,5	.45,7	.46,4	.45,5	.44,1
Ecuador.....	do.....	.51,6	.46,5	.45,7	.46,4	.45,5	.44,1
India.....	Silver rupee.....	.24,5	.22,1	.21,7	.22	.21,6	.21,0
Japan ‡.....	Silver yen.....	.55,6	.50,1	.49,3	.50	.49,1	.47,6
Mexico.....	Silver dollar.....	.56	.50,5	.49,7	.50,4	.49,5	.47,9
Peru.....	Silver sol.....	.51,6	.46,5	.45,7	.46,4	.45,5	.44,1
Russia §.....	Silver ruble.....	.41,3	.37,2	.36,6	.37,1	.36,4	.35,3
Tripoli.....	Silver mahbub.....	.46,5	.41,9	.41,3	.41,8	.41,1	.39,8

\* Austria-Hungary had the silver standard up to August, 1892 (*see* note to "fluctuating" table B).

† China (silver). The Haikwan tael is the customs tael, and the Shanghai tael that used in trade. Consul-General Denny (CONSULAR REPORTS No. 43, p. 516) says: "The value of the tael varies in the different ports of China, and every port has two taels, one being the Government, or Haikwan, tael, in which all duties have to be paid, and the other the market tael, the former exceeding the latter by some 11 per cent."

‡ Gold is the nominal standard in Japan, but silver is practically the standard. The fixed value of the gold yen is 99.7 cents.

§ The gold ruble is valued at 77.2 cents. Silver is the nominal standard, but paper is the actual currency, and its depreciation is measured by the gold standard.

¶ The Venezuelan bolivar became fixed in value (19.3 cents) on January 1, 1892.

## FOREIGN WEIGHTS AND MEASURES.

The following table embraces only such weights and measures as are given from time to time in CONSULAR REPORTS and in Commercial Relations:

*Foreign weights and measures, with American equivalents.*

Denominations.	Where used.	American equivalent.
Almude.....	Portugal.....	4.422 gallons.
Ardeb.....	Egypt.....	7.6907 bushels.
Are.....	Metric.....	0.02471 acre.
Arobe.....	Paraguay.....	25 pounds.
Arratel or libra.....	Portugal.....	1.011 pounds.
Arroba (dry).....	Argentine Republic.....	25.3175 pounds.
Do.....	Brazil.....	32.38 pounds.
Do.....	Cuba.....	25.3664 pounds.
Do.....	Portugal.....	32.38 pounds.
Do.....	Spain.....	25.36 pounds.
Do.....	Venezuela.....	25.4024 pounds.
Arroba (liquid).....	Cuba, Spain, and Venezuela.....	4.263 gallons.
Arshine.....	Russia.....	28 inches.
Arshine (square).....	do.....	5.44 square feet.
Ariel.....	Morocco.....	1.12 pounds.
Baril.....	Argentine Republic and Mexico.....	20.0787 gallons.
Barrel.....	Malta (customs).....	11.4 gallons.
Do.....	Spain (raisins).....	100 pounds.
Berkovet.....	Russia.....	361.12 pounds.
Bongkal.....	India.....	832 grains.
Bonw.....	Sumatra.....	7,096.5 square meters.
Bu.....	Japan.....	0.1 inch.
Butt (wine).....	Spain.....	140 gallons.
Caffiso.....	Malta.....	5.4 gallons.
Candy.....	India (Bombay).....	529 pounds.
Do.....	India (Madras).....	500 pounds.
Cantar.....	Morocco.....	113 pounds.
Do.....	Syria (Damascus).....	575 pounds.
Do.....	Turkey.....	124.7036 pounds.
Cantaro (Cantar).....	Malta.....	175 pounds.
Carga.....	Mexico and Salvador.....	300 pounds.
Catty.....	China.....	1.333 1/3 (1 1/3) pounds.
Do.....	Japan.....	1.31 pounds.
Do.....	Java, Siam, Malacca.....	1.35 pounds.
Do.....	Sumatra.....	2.12 pounds.
Centaro.....	Central America.....	4.2631 gallons.
Centner.....	Bremen and Brunswick.....	117.5 pounds.
Do.....	Darmstadt.....	110.24 pounds.
Do.....	Denmark and Norway.....	110.11 pounds.
Do.....	Nuremberg.....	112.43 pounds.
Do.....	Prussia.....	113.44 pounds.
Do.....	Sweden.....	93.7 pounds.
Do.....	Vienna.....	123.5 pounds.
Do.....	Zollverein.....	110.24 pounds.
Do.....	Double or metric.....	220.46 pounds.
Chih.....	China.....	14 inches.
Coyan.....	Sarawak.....	3,098 pounds.
Do.....	Siam (Koyan).....	4,667 pounds.

*Foreign weights and measures, with American equivalents—Continued.*

Denominations.	Where used.	American equivalent.
Cuadra.....	Argentine Republic.....	4.2 acres.
Do.....	Paraguay.....	78.9 yards.
Do.....	Paraguay (square).....	8.677 square feet.
Do.....	Uruguay.....	Nearly 2 acres.
Cubic meter.....	Metric.....	35.3 cubic feet.
Cwt. (hundredweight).....	British.....	112 pounds.
Desiatine.....	Russia.....	2.6997 acres.
Do.....	Spain.....	1.599 bushels.
Drachme.....	Greece.....	Half ounce.
Dun.....	Japan.....	1 inch.
Egyptian weights and measures.....	(See CONSULAR REPORTS No. 144.)	
Fanega (dry).....	Central America.....	1.5745 bushels.
Do.....	Chile.....	2.575 bushels.
Do.....	Cuba.....	1.599 bushels.
Do.....	Mexico.....	1.54728 bushels.
Do.....	Morocco.....	Strike fanega, 70 lbs. full fanega, 118 lbs.
Do.....	Uruguay (double).....	7.776 bushels.
Do.....	Uruguay (single).....	3.888 bushels.
Do.....	Venezuela.....	1.599 bushels.
Fanega (liquid).....	Spain.....	16 gallons.
Feddan.....	Egypt.....	1.03 acres.
Frail (raisins).....	Spain.....	50 pounds.
Frasco.....	Argentine Republic.....	2.506 quarts.
Do.....	Mexico.....	2.5 quarts.
Fuder.....	Luxemburg.....	264.17 gallons.
Garnice.....	Russian Poland.....	0.88 gallon.
Gram.....	Metric.....	15.432 grains.
Hectare.....	.....do.....	2.471 acres.
Hectoliter:		
Dry.....	.....do.....	2.838 bushels.
Liquid.....	.....do.....	26.417 gallons.
Joch.....	Austria-Hungary.....	1.422 acres.
Ken.....	Japan.....	4 yards.
Kilogram (kilo).....	Metric.....	2.2046 pounds.
Kilometer.....	.....do.....	0.621376 mile.
Klafter.....	Russia.....	216 cubic feet.
Kota.....	Japan.....	5.13 bushels.
Korree.....	Russia.....	3.5 bushels.
Last.....	Belgium and Holland.....	85.134 bushels.
Do.....	England (dry malt).....	82.52 bushels.
Do.....	Germany.....	2 metric tons (4,480 pounds).
Do.....	Prussia.....	112.29 bushels.
Do.....	Russian Poland.....	11.3 bushels.
Do.....	Spain (salt).....	4,760 pounds.
League (land).....	Paraguay.....	4,633 acres.
Li.....	China.....	2,115 feet.
Libra (pound).....	Castilian.....	7,100 grains (troy).
Do.....	Argentine Republic.....	7.0127 pounds.
Do.....	Central America.....	1.043 pounds.
Do.....	Chile.....	1.014 pounds.
Do.....	Cuba.....	1.0161 pounds.
Do.....	Mexico.....	1.01465 pounds.
Do.....	Peru.....	1.0143 pounds.
Do.....	Portugal.....	1.011 pounds.
Do.....	Uruguay.....	1.0143 pounds.
Do.....	Venezuela.....	1.0161 pounds.
Liter.....	Metric.....	1.0567 quarts.
Livre (pound).....	Greece.....	1.1 pounds.
Do.....	Guiana.....	1.0791 pounds.

*Foreign weights and measures, with American equivalents—Continued.*

Denominations.	Where used.	American equivalent.
Load.....	England (timber).....	Square, 50 cubic feet; unbawn, 40 cubic feet; inch planks, 600 super- ficial feet.
Manzana .....	Costa Rica.....	1½ acres.
Marc.....	Bolivia.....	0.507 pound.
Maund.....	India.....	82½ pounds.
Meter.....	Metric.....	39.37 inches.
Mil.....	Denmark.....	4.68 miles.
Do.....	Denmark (geographical).....	4.61 miles.
Morgen.....	Prussia.....	0.63 acre.
Oke.....	Egypt.....	2.7225 pounds.
Do.....	Greece.....	2.84 pounds.
Do.....	Hungary.....	3.0817 pounds.
Do.....	Turkey.....	2.85418 pounds.
Do.....	Hungary and Wallachia.....	2.5 pints.
Pic.....	Egypt.....	21¼ inches.
Picul.....	Borneo and Celebes.....	135.64 pounds.
Do.....	China, Japan, and Sumatra.....	133½ pounds.
Do.....	Java.....	135.1 pounds.
Do.....	Philippine Islands (hemp).....	139.45 pounds.
Do.....	Philippine Islands (sugar).....	140 pounds.
Pie.....	Argentine Republic.....	0.9478 foot.
Do.....	Castilian.....	0.91407 foot.
Pik.....	Turkey.....	27.9 inches.
Pood.....	Russia.....	36.112 pounds.
Pund (pound).....	Denmark and Sweden.....	1.102 pounds.
Quarter.....	Great Britain.....	8.252 bushels.
Do.....	London (coal).....	36 bushels.
Quintal.....	Argentine Republic.....	101.42 pounds.
Do.....	Brazil.....	130.06 pounds.
Do.....	Castile, Chile, Mexico, and Peru.....	101.61 pounds.
Do.....	Greece.....	123 2 pounds.
Do.....	Newfoundland (fish).....	112 pounds.
Do.....	Paraguay.....	100 pounds.
Do.....	Syria.....	125 pounds.
Do.....	Metric.....	220.46 pounds.
Rottle.....	Palestine.....	6 pounds.
Do.....	Syria.....	5¾ pounds.
Sagen.....	Russia.....	7 feet.
Salm.....	Malta.....	490 pounds.
Se.....	Japan.....	3.6 feet.
Seer.....	India.....	1 pound 13 ounces.
Shaku.....	Japan.....	10 inches.
Sho.....	do.....	1.6 quarts.
Standard (St. Petersburg).....	Lumber measure.....	165 cubic feet.
Stone.....	British.....	14 pounds.
Suerte.....	Uruguay.....	2,700 cuadras ( <i>see</i> cua- dra).
Tael.....	Cochin China.....	590.75 grains (troy).
Tan.....	Japan.....	0.25 acre.
To.....	do.....	2 pecks.
Ton.....	Space measure.....	40 cubic feet.
Tonde (cereals).....	Denmark.....	3.94783 bushels.
Tondeland.....	do.....	1.36 acres.
Tsubo.....	Japan.....	6 feet square.
Tsun.....	China.....	1.41 inches.
Tunna.....	Sweden.....	4.5 bushels.
Tunnland.....	do.....	1.22 acres.
Vara.....	Argentine Republic.....	34.1208 inches.
Do.....	Castile.....	0.914117 yard.
Do.....	Central America.....	38.874 inches.

*Foreign weights and measures, with American equivalents—Continued.*

Denominations.	Where used.	American equivalent.
Vara.....	Chile and Peru .....	33.367 inches.
Do.....	Cuba.....	33.384 inches.
Do.....	Curaçao.....	33.375 inches.
Do.....	Mexico.....	33 inches.
Do.....	Paraguay.....	34 inches.
Do.....	Venezuela.....	33.384 inches.
Vedro.....	Russia.....	2.707 gallons.
Vergees.....	Isle of Jersey.....	71.1 square rods.
Verst.....	Russia.....	0.663 mile.
Vloeka.....	Russian Poland.....	41.98 acres.

## METRIC WEIGHTS AND MEASURES.

*Metric weights.*

Milligram ( $\frac{1}{1000}$  gram) equals 0.0154 grain.  
 Centigram ( $\frac{1}{100}$  gram) equals 0.1543 grain.  
 Decigram ( $\frac{1}{10}$  gram) equals 1.5432 grains.  
 Gram equals 15.432 grains.  
 Decagram (10 grams) equals 0.3527 ounce.  
 Hectogram (100 grams) equals 3.5274 ounces.  
 Kilogram (1,000 grams) equals 2.2046 pounds.  
 Myriagram (10,000 grams) equals 22.046 pounds.  
 Quintal (100,000 grams) equals 220.46 pounds.  
 Millier or tonnea—ton (1,000,000 grams) equals 2,204.6 pounds.

*Metric dry measure.*

Millimeter ( $\frac{1}{1000}$  liter) equals 0.061 cubic inch.  
 Centiliter ( $\frac{1}{100}$  liter) equals 0.6102 cubic inch.  
 Deciliter ( $\frac{1}{10}$  liter) equals 6.1022 cubic inches.  
 Liter equals 0.908 quart.  
 Decaliter (10 liters) equals 9.08 quarts.  
 Hectoliter (100 liters) equals 2.838 bushels.  
 Kiloliter (1,000 liters) equals 1.308 cubic yards.

*Metric liquid measure.*

Millimeter ( $\frac{1}{1000}$  liter) equals 0.27 fluid ounce.  
 Centiliter ( $\frac{1}{100}$  liter) equals 0.338 fluid ounce.  
 Deciliter ( $\frac{1}{10}$  liter) equals 0.845 gill.  
 Liter equals 1.0567 quarts.  
 Decaliter (10 liters) equals 2.6417 gallons.  
 Hectoliter (100 liters) equals 26.417 gallons.  
 Kiloliter (100 liters) equals 264.17 gallons.

*Metric measures of length.*

Millimeter ( $\frac{1}{1000}$  meter) equals 0.0394 inch.  
 Centimeter ( $\frac{1}{100}$  meter) equals 0.3937 inch.  
 Decimeter ( $\frac{1}{10}$  meter) equals 3.937 inches.  
 Meter equals 39.37 inches.

Decameter (10 meters) equals 393.7 inches.

Hectometer (100 meters) equals 328 feet 1 inch.

Kilometer (1,000 meters) equals 0.62137 mile (3,280 feet 10 inches).

Myriameter (10,000 meters) equals 6.2137 miles.

*Metric surface measures.*

Centare (1 square meter) equals 1,550 square inches.

Are (100 square meters) equals 119.6 square yards.

Hectare (10,000 square meters) equals 2.471 acres.



# CONSULAR REPORTS.

## COMMERCE, MANUFACTURES, ETC.

VOL. XLVII.

APRIL, 1895.

No. 175.

### EXPORTS DECLARED FOR THE UNITED STATES.

QUARTER ENDING DECEMBER 31, 1894.

The exports declared for the United States during the quarter ending June 30, 1894, were published as follows: Austria-Hungary, Belgium, Canada, Germany (consulates under the consulate-general of Frankfort), Italy, Mexico, Netherlands, Russia, Sweden and Norway, Switzerland, United Kingdom, Turkey, and the West Indies, in CONSULAR REPORTS No. 168; for the June quarter, also, but received too late for publication with the foregoing, France and British India, in No. 169, and Spain, in No. 170. For the quarter ending September 30, 1894, with the exception of Spain and Turkey, which were printed in CONSULAR REPORTS No. 172, the declared exports were printed in CONSULAR REPORTS No. 171. Following are the declared exports for the quarter ending December 31, 1894:

#### ALGERIA.

[Report by Consul Grellet.]

##### *Algiers.*

Goatskins.....	\$47,348.26
Rough sticks.....	364.05
Wool.....	474.39
Wine.....	214.00
Total.....	48,400.70

##### *Oran.*

African fiber.....	\$13,767.30
Goatskins.....	400.63
Total.....	14,167.93

##### *Total from Algeria.*

African fiber.....	\$13,767.30
Goatskins.....	47,748.89

Rough sticks.....	\$364.05
Wool.....	474.39
Wine.....	214.00
Total.....	62,568.63
Total for same quarter in 1893..	4,455.97
Increase.....	58,112.66

#### AUSTRIA-HUNGARY.

[Report by Consul-General Judd.]

##### *Budapest.*

Books and papers.....	\$379.18
Cuttlefish bones.....	537.68
Embroideries and laces.....	243.60
Fruits, dried, etc.....	11,796.15
Furniture.....	610.04
Glassware.....	3,559.56
Herbs, roots, and leaves.....	3,193.37
Mineral water.....	17,255.33

No. 175—I.



Oils, paints, and colors.....	\$604.33
Porcelain and pottery.....	109.64
Pulp.....	1,284.54
Pulse.....	17,770.50
Umbrella fixtures and sticks.....	7,125.95
Wines and liquors.....	11,379.29
Wool.....	620.83
Miscellaneous.....	1,383.23
Total.....	77,853.22
Total for same quarter in 1893..	131,968.93
Decrease.....	34,115.71

*Prague.*

Artificial flowers.....	\$6,969.18
Bed feathers.....	39,980.00
Beer.....	21,120.33
Beet-root sugar.....	150,654.05
Books and papers.....	1,912.90
Buttons.....	10,139.53
Carlsbad Sprudel salt.....	23,264.61
Cloth and woolen goods.....	3,425.13
Drugs and chemicals.....	11,801.15
Embroideries and laces.....	1,735.91
Fruits, dried, etc.....	692.66
Furniture.....	653.93
Glassware.....	45,936.11
Gloves.....	34,168.40
Graphite.....	1,613.99
Gum and glue.....	3,007.23
Hair:	
Animal.....	655.50
Human.....	4,654.32
Hops.....	20,065.00
Jewelry and precious stones.....	305.07
Leather and skins.....	862.51
Linen goods.....	2,579.13
Metal ware.....	3,095.62
Mineral water.....	5,594.48
Musical instruments.....	6,402.50
Oils, paints, and colors.....	1,364.78
Paper goods.....	1,720.53
Porcelain and pottery.....	134,826.23
Potash.....	15,153.69
Pulp.....	21,208.33
Pulse.....	37,956.69
Sparterie.....	307.95
Toys.....	570.62
Wool.....	49,569.98
Miscellaneous.....	3,349.17
Total.....	667,323.21
Total for same quarter in 1893..	1,417,090.29
Decrease.....	749,767.08

*Reichenberg.*

Art, works of.....	\$142.17
Artificial flowers.....	1,990.46
Buttons.....	20,021.80
Cloth and woolen goods.....	981.79
Cutlery.....	3,330.31
Furniture.....	72.86
Glassware.....	107,218.21
Jewelry and precious stones.....	70,955.67
Linen goods.....	57,449.00

Metal ware.....	\$234.77
Musical instruments.....	147.45
Oils, paints, and colors.....	438.63
Paper goods.....	1,321.13
Porcelain and pottery.....	18,857.81
Silks and velvets.....	158.66
Sparterie.....	919.77
Toys.....	243.68
Miscellaneous.....	1,215.99
Total.....	285,700.15
Total for same quarter in 1893..	182,947.02
Increase.....	102,753.12

*Trieste.*

Argols.....	\$7,519.71
Cuttlefish bones.....	5,312.56
Drugs and chemicals.....	1,701.80
Fruits, dried, etc.....	23,260.00
Gum and glue.....	35,118.88
Herbs, roots, and leaves.....	7,010.39
Insect powder and flowers.....	31,386.34
Leather and skins.....	135,956.35
Mineral water.....	181.12
Oils, paints, and colors.....	2,305.02
Polishing earth.....	970.12
Pulse.....	2,403.85
Seeds.....	2,785.03
Shell and bone ware.....	11,467.70
Soap.....	2,412.39
Sponges.....	4,840.54
White lead.....	1,379.31
Wines and liquors.....	389.76
Miscellaneous.....	2,754.24
Total.....	279,155.11
Total for same quarter in 1893..	142,479.34
Increase.....	136,675.77

*Vienna.*

Albumen.....	\$9,151.06
Argols.....	24,214.54
Art, works of.....	10,597.00
Artificial flowers.....	13,035.29
Baskets and basket ware.....	8,107.98
Brushes and bristles.....	2,418.70
Buttons.....	124,277.32
Carbon lights.....	11,056.99
Carpets.....	2,521.48
Cloths and woolen goods.....	41,649.96
Cotton goods.....	15,934.39
Dresses.....	1,170.64
Drugs and chemicals.....	20,278.20
Fans.....	37,400.76
Furniture.....	11,272.77
Glassware.....	16,143.98
Gloves.....	14,040.02
Gum and glue.....	640.38
Hair (animal).....	1,628.42
Hats and caps.....	433.35
Jet trimmings.....	943.08
Leather and skins.....	16,881.21
Leather goods.....	12,588.81
Linen goods.....	42,415.82
Matches.....	461.61

Meerschaum, crude.....	\$5,953.45
Metal ware.....	27,509.33
Musical instruments.....	693.20
Oils, paints, and colors.....	2,733.89
Ozocerite and ceresin.....	6,026.89
Paper goods.....	732.00
Porcelain and pottery.....	8,415.44
Pulp.....	21,418.33
Pulse.....	5,618.52
Scientific instruments.....	5,068.77
Shell and bone ware.....	8,089.85
Shoes and boots.....	2,607.23
Silks and velvets.....	46,708.09
Smokers' articles.....	9,647.11
Stained glass.....	456.80
Toys.....	414.06
Umbrella fixtures and sticks.....	34,008.15
Wax ware.....	847.15
Wines and liquors.....	6,493.22
Wooden ware.....	3,196.35
Miscellaneous.....	2,836.39
Total.....	658,737.98
Total for same quarter in 1893..	368,055.22
Increase.....	290,682.76

*Total from Austria-Hungary.*

Albumen.....	\$9,151.06
Argols.....	31,734.25
Art, works of.....	10,739.17
Artificial flowers.....	21,994.93
Baskets and basket ware.....	8,107.98
Bed feathers.....	39,980.00
Beer.....	21,120.33
Beet-root sugar.....	150,654.05
Books and papers.....	2,298.08
Brushes and bristles.....	2,418.70
Buttons.....	154,438.65
Carbon lights.....	11,056.99
Carlsbad Sprudel salt.....	23,264.61
Carpets.....	2,521.48
Cloth and woolen goods.....	46,056.88
Cotton goods.....	15,934.39
Cutlery.....	3,330.31
Cuttlefish bones.....	5,850.24
Dresses.....	1,170.64
Drugs and chemicals.....	53,781.15
Embroideries and laces.....	1,979.51
Fans.....	37,400.76
Fruits, dried, etc.....	35,748.81
Furniture.....	12,609.60
Glassware.....	172,857.86
Gloves.....	48,208.42
Graphite.....	1,613.99
Gum and glue.....	38,766.49
Hair:	
Animal.....	2,283.92
Human.....	4,654.32
Hats and caps.....	433.35
Herbs, roots, and leaves.....	10,203.76
Hops.....	20,065.00
Insect powder and flowers.....	31,386.34
Jet trimmings.....	943.08
Jewelry and precious stones.....	71,260.74
Leather and skins.....	153,700.07

Leather goods.....	\$12,588.81
Linen goods.....	102,443.95
Matches.....	461.61
Meerschaum, crude.....	5,953.45
Metal ware.....	30,839.72
Mineral water.....	23,030.93
Musical instruments.....	7,243.15
Oils, paints, and colors.....	7,446.65
Ozocerite and ceresin.....	6,026.89
Paper goods.....	3,773.66
Polishing earth.....	970.12
Porcelain and pottery.....	162,209.12
Potash.....	15,153.69
Pulp.....	43,911.20
Pulse.....	63,749.56
Scientific instruments.....	5,068.77
Seeds.....	2,785.03
Shell and bone ware.....	19,557.55
Shoes and boots.....	2,607.23
Silks and velvets.....	46,866.75
Smokers' articles.....	9,647.11
Soap.....	2,412.39
Sparterie.....	1,227.72
Sponges.....	4,840.54
Stained glass.....	456.80
Toys.....	1,228.36
Umbrella fixtures and sticks.....	41,134.10
Wax ware.....	847.15
White lead.....	1,379.31
Wines and liquors.....	18,262.27
Wooden ware.....	3,196.35
Wool.....	50,190.82
Miscellaneous.....	11,539.02
Total.....	1,968,769.68
Total for same quarter in 1893..	2,242,540.80
Decrease.....	273,771.12

**BELGIUM.**

[Report by Consul Roosevelt.]

*Antwerp.*

Bagging.....	\$1,620.91
Bleaching powders.....	10,618.75
Cement.....	26,041.27
Chicory.....	16,493.00
Coffee.....	22,721.54
Diamonds.....	4,373.08
Feathers, bed.....	3,726.17
Furniture.....	3,602.57
Gin.....	587.40
Glass (plate).....	17,870.79
Glycerin.....	25,494.28
Hair, animal.....	16,857.76
India rubber.....	7,098.07
Ivory.....	16,780.90
Lead.....	144,525.35
Linoleum.....	11,217.93
Liquors.....	1,795.15
Matches.....	4,573.80
Meat, extract.....	69,653.66
Oil paintings.....	9,275.20
Paper and books.....	21,392.32
Phosphates.....	25,539.05

Potash.....	\$10,393.79
Rags and paper stock.....	12,592.87
Rope (old manila).....	905.18
Sardines.....	4,960.38
Skins (rabbit, sheep, and other).....	70,150.30
Soda.....	3,862.26
Sugar (beet).....	247,865.49
Sulphur.....	3,942.46
Vegetable fibers (flax, hemp, and tow).....	1,119.09
Vegetables, preserved.....	1,716.68
Wool.....	112,990.05
Wool grease.....	5,192.72
Sundries.....	10,449.45
Total.....	947,999.73
Total for same quarter in 1893.....	2,113,134.46
Decrease.....	1,165,134.73

*Brussels.*

Albumen.....	\$486.75
Aniline colors.....	2,936.01
Bagging.....	450.96
Braids and button stock.....	2,211.43
Braids (hat beads) and jet on wire.....	9,530.24
Brass.....	134.07
Bronze ornaments.....	350.02
Cement.....	120,253.70
Church regalia and ornaments.....	351.26
Coal (bricks).....	1,030.14
Corsets.....	52,666.83
Diamonds.....	114.64
Earthenware.....	1,747.02
Fur, refuse.....	1,315.58
Furniture.....	3,381.36
Glass:	
Plate.....	187,742.02
Window.....	226,415.41
Other.....	2,624.70
Gloves.....	108,682.40
Glue and glue stock.....	4,607.56
Hats.....	378.38
Hatters' fur.....	48,773.92
Horn strips.....	704.37
Lace goods.....	49,473.89
Leather.....	4,336.49
Linen goods.....	74,732.67
Machinery.....	456.45
Marble.....	4,381.41
Marble and granite.....	389.31
Medicinal plants.....	1,520.26
Musical instruments.....	950.64
Naphthalene.....	923.78
Oil paintings.....	1,335.66
Paper and books.....	2,014.92
Phosphates.....	7,352.73
Rags and paper stock.....	5,967.24
Skins (rabbit, sheep, and other).....	27,061.48
Soap and perfumery.....	999.06
Soda, prussiate of.....	3,455.57
Stones (paving).....	468.02
Tiles (encaustic).....	227.00
Vegetable fibers (flax, hemp, and tow).....	3,402.09
Vegetables, preserved.....	2,776.46
Wine.....	368.63
Woolen goods.....	397.77

Zinc.....	\$35.90
Sundries.....	2,372.28
Total.....	972,288.46
Total for same quarter in 1893.....	716,249.09
Increase.....	256,039.37

*Ghent.*

Albumen.....	\$243.37
Braids and button stock.....	115.72
Braids (hat beads) and jet on wire.....	321.46
Cement.....	8,472.70
Chicory root.....	58,725.72
Cordage.....	739.18
Hatters' fur.....	26,036.67
Lace goods.....	15,689.59
Linen goods.....	31,757.85
Matches.....	1,091.02
Oil.....	511.38
Plants.....	30,090.31
Powder (smokeless).....	1,129.05
Provisions and potatoes.....	626.67
Rags and paper stock.....	102,780.06
Silk shoe laces.....	421.71
Skins (rabbit, sheep, and other).....	13,091.76
Stationery.....	296.30
Thread.....	368.48
Vegetable fibers (flax, hemp, and tow).....	66,283.36
Yarns (crochet), cotton.....	600.12
Sundries.....	28.95
Total.....	359,421.43
Total for same quarter in 1893.....	263,420.67
Increase.....	116,000.76

*Liege.*

Cartridge shells.....	\$119.14
Fancy goods.....	1,585.68
Firearms.....	118,474.96
Glassware.....	30,648.07
Hones.....	4,652.31
Indigo.....	7,420.49
Lamp burners.....	596.65
Nails.....	159.23
Paper and books.....	989.45
Potash.....	661.05
Provisions and potatoes.....	149.62
Skins (rabbit, sheep, and other).....	40,513.85
Straw goods.....	5,590.84
Superphosphate.....	17,185.58
Wheels.....	392.72
Wool.....	28,924.23
Woolen goods.....	107,954.23
Zinc.....	6,572.64
Total.....	372,590.74
Total for same quarter in 1893.....	259,043.06
Increase.....	113,547.68

*Total from Belgium.*

Albumen.....	\$730.12
Aniline colors.....	2,936.01
Bagging.....	2,071.87
Bleaching powders.....	10,618.75

Braids and button stock.....	\$2,327.15
Braids (hat beads) and jet on wire.....	9,851.70
Brass.....	134.07
Bronze ornaments.....	350.02
Cartridge shells.....	129.14
Cement.....	154,767.67
Chicory.....	16,493.80
Chicory root.....	58,725.72
Church regalia and ornaments.....	351.26
Coal (bricks).....	1,030.14
Coffee.....	22,721.54
Cordage.....	739.18
Corsets.....	52,666.83
Diamonds.....	4,487.72
Earthenware.....	1,747.02
Fancy goods.....	1,585.68
Feathers, bed.....	3,726.17
Firearms.....	118,474.96
Fur, refuse.....	1,315.58
Furniture.....	6,983.93
Gin.....	587.40
Glass:	
Plate.....	205,612.81
Window.....	226,415.41
Other.....	2,624.70
Glassware.....	30,648.07
Gloves.....	108,682.40
Glue and glue stock.....	4,607.54
Glycerin.....	25,494.28
Hair, animal.....	16,857.76
Hats.....	378.38
Hatters' fur.....	74,810.59
Hones.....	4,652.31
Horn strips.....	704.37
India rubber.....	7,098.07
Indigo.....	7,420.49
Ivory.....	16,780.90
Lace goods.....	65,163.48
Lamp burners.....	596.65
Lead.....	144,525.35
Leather.....	4,336.49
Linen goods.....	106,490.52
Linoleum.....	11,217.93
Liquors.....	1,795.15
Machinery.....	456.45
Marble.....	4,381.41
Marble and granite.....	389.31
Matches.....	5,664.82
Meat, extract.....	69,653.66
Medicinal plants.....	1,520.26
Musical instruments.....	950.64
Nails.....	159.23
Naphthalene.....	923.78
Oil.....	511.38
Oil paintings.....	10,610.86
Paper and books.....	24,396.69
Phosphates.....	32,891.78
Plants.....	30,090.31
Potash.....	11,054.84
Powder (smokeless).....	1,129.05
Provisions and potatoes.....	776.29

Rags and paper stock.....	\$121,340.17
Rope (old manila).....	905.18
Sardines.....	4,960.38
Silk shoe laces.....	421.71
Skins (rabbit, sheep, and other).....	150,817.39
Soap and perfumery.....	999.06
Soda.....	3,862.26
Soda, prussiate of.....	3,455.57
Stationery.....	296.30
Stones (paving).....	468.02
Straw goods.....	5,590.84
Sugar (beet).....	247,865.49
Sulphur.....	3,942.46
Superphosphate.....	17,185.58
Thread.....	368.48
Tiles (encaustic).....	227.00
Vegetable fibers (flax, hemp, and tow).....	70,804.54
Vegetables, preserved.....	4,493.14
Wheels.....	392.72
Wine.....	368.63
Wool.....	141,914.28
Wool grease.....	5,192.78
Woolen goods.....	108,352.00
Yarns (crochet), cotton.....	600.12
Zinc.....	6,608.54
Sundries.....	12,850.68
Total.....	2,652,300.36
Total for same quarter in 1893.....	3,331,847.28
Decrease.....	679,546.92

## CANADA.

## BRITISH COLUMBIA.

[Report by Consul Peterson.]

## Vancouver.\*

Coal.....	\$187,336.00
Fish.....	30,786.00
Fish (in transit).....	32,500.00
Furs and hides.....	9,286.00
Lumber, shingles, etc.....	18,182.00
Merchandise.....	1,315.00
Returned American.....	1,961.00
Ore:	
Copper.....	1,597.00
Iron.....	2,806.00
Gold.....	3,419.00
Galena.....	160,619.00
Slate.....	3,020.00
Total.....	452,827.00
Total for previous quarter.....	243,168.00
Increase.....	209,659.00

## Victoria.

[Report from Vice-Consul Eure.]

Gold bullion.....	\$109,351.99
Furs, hides, and skins.....	25,828.70
Wool.....	9,520.00

\* The declared exports for the quarter ending September 30, 1894, which were received too late for publication in CONSULAR REPORTS No. 171, were as follows: Apples, \$126; coal, \$161,764; fish, \$14,981; furs and hides, \$1,201; lumber, shingles, etc., \$3,552; merchandise, \$301; returned American goods, \$3,141; copper ore, \$611; gold ore, \$7,932; galena, \$47,648; tea, \$1,821; total, \$243,168.

Liquors.....	\$4,096.33
Fish.....	574.64
Rice.....	1,594.80
Opium.....	392.70
Indian curios, etc.....	352.50
Bananas.....	117.00
Oat bran.....	89.10
Stone.....	236.96
Miscellaneous.....	45.85
Returned American goods.....	4,643.26
Total.....	156,843.83
Total for same quarter in 1893..	124,259.10
Increase.....	32,584.73

MARITIME PROVINCES AND NEWFOUND  
LAND.

[Report by Consul-General Ingraham.]

*Charlottetown, P. E. I.*

Agricultural products :	
Potatoes.....	\$46,937.28
Turnips.....	130.65
Animals :	
Fowls and geese.....	660.00
Horses.....	5,552.00
Sheep and lambs.....	5,662.00
Eggs.....	11,005.32
Emigrants' effects.....	3,879.50
Fish :	
Canned.....	19,467.05
Fresh.....	23.30
Pickled.....	13,098.00
Sounds.....	869.40
Fruit and canned fruit.....	2,535.20
Fur, hides, and skins.....	4,666.99
Goods returned to United States.....	60.00
Junk.....	540.84
Sundries.....	188.44
Wool.....	7,763.13
Total.....	123,039.10
Total for same quarter in 1893..	108,210.68

*Halifax, N. S.*

Agricultural products (potatoes).....		\$443.45
Berries.....	16,094.56	
Eggs.....	3.60	
Emigrants' effects.....	4,948.50	
Fish :		
Canned.....	10,582.19	
Dry.....	68,605.36	
Fresh.....	4,470.67	
Oil.....	10,027.31	
Pickled.....	84,203.52	
Sounds.....	217.00	
Fur, hides, and skins.....	5,200.33	
Goods returned to United States.....	1,637.82	
Junk.....	2,572.55	
Machinery.....	1,345.45	
Silica.....	726.87	
Skates.....	1,037.80	
Sundries.....	308.36	
Tea.....	133.83	

Wood (laths and lumber).....	\$6,303.66
Wool.....	2,182.50
Total.....	221,045.33
Total for same quarter in 1893..	231,102.50

*Moncton, N. B.*

Agricultural products (potatoes).....		\$778.85
Animals :		
Horses.....	140.00	
Sheep and lambs.....	5,405.10	
Berries.....	257.00	
Clay (terra alba).....	1,448.17	
Emigrants' effects.....	3,820.00	
Fish :		
Canned.....	8,986.00	
Fresh.....	42,908.48	
Pickled.....	231.25	
Fruit and canned fruit.....	13,189.80	
Grindstones.....	2,891.00	
Minerals :		
Gypsum or plaster of paris..	9,250.41	
Plaster, calcined.....	5,220.25	
Sundries.....	259.66	
Wood :		
Laths and lumber.....	78,185.26	
Fire.....	667.50	
Pulp.....	600.00	
Sulphite fiber.....	14,392.76	
Total.....	188,631.49	
Total for same quarter in 1893..	174,399.23	

*Pictou, N. S.*

Agricultural products (potatoes).....		\$301.33
Animals (sheep and lambs).....	1,042.77	
Coal.....	38,614.30	
Emigrants' effects.....	3,711.10	
Fish :		
Canned.....	36,562.00	
Dry.....	2,035.50	
Fresh.....	7,027.15	
Oil.....	567.85	
Pickled.....	9,891.50	
Sounds.....	54.20	
Fur, hides, and skins.....	3,085.50	
Grindstones.....	2,724.02	
Minerals (gypsum or plaster of paris).	3,662.96	
Stone for building.....	629.00	
Wool.....	3,492.96	
Total.....	133,402.14	
Total for same quarter in 1893..	70,358.71	

*St. John, N. B.*

Agricultural products (potatoes).....		\$82.25
Animals :		
Fowls and geese.....	280.33	
Horses.....	82.50	
Bark.....	1,757.50	
Berries.....	1,183.16	
Cotton duck and cotton waste.....	1,140.16	
Emigrants' effects.....	9,784.50	
Fish :		
Dry.....	10,864.92	
Oil.....	5,563.00	
Pickled.....	9,921.75	

Fruit and canned fruit.....	\$507. 10
Fur, hides, and skins.....	621. 50
Goods returned to United States.....	676. 87
Junk.....	102. 05
Medicinal preparations.....	168. 50
Minerals:	
Cement.....	1,700. 00
Granite.....	646. 00
Lime.....	10,610. 33
Salt.....	1,201. 00
Sundries.....	342. 00
Tea.....	454. 16
Tin.....	312. 50
Wood:	
Laths and lumber.....	324,594. 86
Fire.....	10,602. 30
Ships' knees.....	450. 40
Boat.....	250. 00
Wool.....	14,062. 75
Total.....	407,962. 39
Total for same quarter in 1893..	449,865. 58

*St. John's, N. F.*

Fish:	
Dry.....	\$15,096. 60
Fresh.....	2,850. 00
Oil.....	41,328. 29
Pickled.....	17,305. 49
Furs, hides, and skins.....	557. 45
Junk.....	441. 00
Minerals (copper ore).....	30,184. 43
Sulphate of iron.....	63,044. 00
Sundries.....	99. 50
Total.....	170,906. 76
Total for same quarter in 1893..	190,480. 00

*St. Stephen, N. B.*

Agricultural products:	
Beans.....	\$520. 00
Hay.....	253. 00
Potatoes.....	40. 00
Turnips.....	7,842. 00
Animals (horses).....	715. 00
Bark.....	6,620. 00
Coal.....	7,850. 00
Emigrants' effects.....	1,808. 00
Fish:	
Dry.....	97. 00
Pickled.....	12. 00
Fur, hides, and skins.....	3,732. 00
Goods returned to United States.....	731. 00
Soda, bicarbonate of.....	529. 00
Sundries.....	61. 00
Wood (laths and lumber).....	94,502. 00
Wool.....	600. 00
Total.....	125,912. 00
Total for same quarter in 1893..	42,896. 55

*Windsor, N. S.*

Agricultural products:	
Hay.....	\$325. 00
Potatoes.....	96. 00

Coal.....	\$4,158. 00
Cotton duck and cotton waste.....	426. 00
Emigrants' effects.....	585. 00
Fish (dry).....	20. 00
Fruit and canned fruit.....	1,635. 00
Fur, hides, and skins.....	194. 00
Grindstones.....	3,990. 00
Gum (spruce).....	1,853. 00
Manganese.....	2,403. 00
Minerals:	
Gypsum or plaster of paris.....	35,642. 00
Plaster, calcined.....	802. 00
Wood (laths and lumber).....	47,024. 00
Wool.....	128. 00
Total.....	99,281. 00
Total for same quarter in 1893..	84,119. 00

*Woodstock, N. B.*

Agricultural products:	
Hay.....	\$941. 00
Potatoes.....	2,609. 35
Animals:	
Fowls and geese.....	1,243. 50
Horses.....	1,777. 00
Sheep and lambs.....	15,284. 40
Bark.....	6,600. 00
Emigrants' effects.....	1,270. 50
Goods returned to United States.....	210. 00
Sundries.....	356. 00
Wood (laths and lumber).....	27,481. 70
Total.....	57,773. 45
Total for same quarter in 1893..	31,692. 55

*Yarmouth, N. S.*

Agricultural products (potatoes).....	\$175. 75
Animals (horses).....	50. 00
Bark.....	303. 00
Berries.....	210. 00
Cotton duck and cotton waste.....	2,212. 50
Eggs.....	18. 00
Emigrants' effects.....	870. 50
Fish:	
Canned.....	2,489. 00
Dry.....	17,598. 70
Fresh.....	522. 50
Oil.....	780. 00
Pickled.....	30,484. 85
Sunds.....	515. 00
Fruit and canned fruit.....	2,091. 00
Fur, hides, and skins.....	503. 00
Goods returned to United States.....	92. 00
Junk.....	58. 00
Paper stock.....	252. 00
Sundries.....	115. 00
Wood:	
Laths and lumber.....	25,106. 44
Fire.....	6,639. 25
Pulp.....	853. 00
Total.....	91,939. 49
Total for same quarter in 1893..	100,168. 51

*Total from maritime provinces and Newfoundland.*

## Agricultural products:

Beans.....	\$520.00
Hay.....	1,519.00
Potatoes.....	51,464.26
Turnips.....	7,972.65

## Animals:

Fowls and geese.....	2,183.83
Horses.....	8,316.50
Sheep and lambs.....	27,394.27

## Bark.....

Bark.....	15,280.50
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## Berries.....

Berries.....	17,744.72
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## Clay (terra alba).....

Clay (terra alba).....	1,448.17
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## Coal.....

Coal.....	50,622.30
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## Cotton duck and cotton waste.....

Cotton duck and cotton waste.....	3,778.66
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## Eggs.....

Eggs.....	11,026.92
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## Emigrants' effects.....

Emigrants' effects.....	30,677.60
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## Fish:

Canned.....	78,086.24
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Dry.....	14,318.08
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Fresh.....	57,802.10
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Oil.....	58,266.45
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Pickled.....	165,148.36
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Sounds.....	1,655.60
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## Fruit and canned fruit.....

Fruit and canned fruit.....	19,958.10
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## Fur, hides, and skins.....

Fur, hides, and skins.....	18,560.77
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## Goods returned to United States.....

Goods returned to United States.....	3,407.69
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## Grindstones.....

Grindstones.....	9,605.02
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## Gum (spruce).....

Gum (spruce).....	1,853.00
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## Junk.....

Junk.....	3,714.44
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## Machinery.....

Machinery.....	1,345.45
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## Manganese.....

Manganese.....	2,403.00
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## Medicinal preparations.....

Medicinal preparations.....	168.50
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## Minerals:

Cement.....	1,700.00
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Copper ore.....	30,184.43
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Granite.....	646.00
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## Gypsum or plaster of paris.....

Gypsum or plaster of paris.....	48,555.37
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Lime.....	10,610.33
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Plaster, calcined.....	6,022.25
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## Paper stock.....

Paper stock.....	252.00
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## Salt.....

Salt.....	1,201.00
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## Soda, bicarbonate of.....

Soda, bicarbonate of.....	520.00
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## Silica.....

Silica.....	726.87
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## Skates.....

Skates.....	1,037.80
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## Stone for building.....

Stone for building.....	620.00
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## Sulphate of iron.....

Sulphate of iron.....	63,044.00
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## Sundries.....

Sundries.....	1,729.96
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## Tea.....

Tea.....	587.99
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## Tin.....

Tin.....	312.50
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## Wood:

Laths and lumber.....	603,197.92
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Fire.....	17,909.05
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Ships' knees.....	450.40
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Pulp.....	1,453.00
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Sulphite fiber.....	14,392.76
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Boat.....	250.00
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## Wool.....

Wool.....	28,229.34
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Total.....	1,599,893.15
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Total for same quarter in 1893..	1,483,293.31
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Increase.....	116,599.84
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## PROVINCE OF ONTARIO.

[Report by Consul-General Riley.]

*Amherstburg.*

Emigrants' effects.....	\$317.75
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Grain (oats, rye, wheat, and buck-	
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wheat).....	1,934.61
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Logs and timber.....	2,880.00
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Lumber.....	2,489.95
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Seeds.....	2,617.62
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Shooks, staves, headings, and bolts...	21,273.98
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All other articles.....	364.00
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Total.....	31,877.91
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Total for same quarter in 1893..	17,078.35
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*Belleville.*

Animals for breeding purposes.....	\$120.00
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Apples (evaporated or green).....	10,062.00
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Barley.....	63,960.96
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Beans.....	8,781.00
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Eggs.....	124.26
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Emigrants' effects.....	3,980.00
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Fish (fresh and salted).....	345.90
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Furs.....	300.00
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Grain (oats, rye, wheat, and buck-	
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wheat).....	4,034.37
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Hay and straw.....	6,627.00
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Hides and skins.....	3,917.32
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Horses.....	685.00
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Laths and shingles.....	13,651.86
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Lumber.....	152,138.43
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Paintings.....	25.00
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Pease (whole and split).....	102,868.76
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Poles and posts.....	5,002.25
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Returned United States products.....	952.57
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Sheep and lambs.....	3,099.05
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Ties (railroad).....	6,671.94
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Wood (pulp).....	1,252.00
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Wool.....	211.90
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All other articles.....	2,111.30
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Total.....	390,862.87
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Total for same quarter in 1893..	317,432.54
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*Brockville.*

Emigrants' effects.....	\$40.15
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Grain (oats, rye, wheat, and buck-	
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wheat).....	259.50
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Hides and skins.....	12,788.00
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Horses.....	522.00
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Laths and shingles.....	2,328.63
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Lumber.....	20,934.55
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Mica (crude and cut).....	112.88
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Poultry (dressed and undressed).....	933.28
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Returned United States products.....	345.17
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Sheep and lambs.....	8,388.00
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Wool:	
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Cord.....	75.00
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Pulp.....	736.00
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Wool.....	376.00
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Total.....	50,914.01
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Total for same quarter in 1893..	41,413.41
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#175, April 1895

*Chatham.*

Apples (evaporated or green).....	\$2,451.78
Barley .....	14,671.32
Beans .....	70,768.76
Eggs.....	3,343.00
Emigrants' effects.....	2,475.00
Grain (oats, rye, wheat, and buck- wheat).....	9,276.15
Hides and skins.....	4,105.08
Logs and timber.....	4,752.50
Lumber .....	3,912.50
Returned United States products.....	124.61
Sheep and lambs.....	1,314.00
Shooks, staves, headings, and bolts...	43,592.19
Wool.....	1,906.38
All other articles.....	2,274.61
Total.....	164,967.88
Total for same quarter in 1893..	105,381.07

*Clifton.*

Animals for breeding purposes.....	\$1,000.00
Apples (evaporated or green).....	500.00
Emigrants' effects.....	1,275.00
Fertilizers .....	204.00
Grain (oats, rye, wheat, and buck- wheat).....	520.00
Horses.....	205.50
Jewelers' sweepings.....	1,473.35
Lumber .....	396.00
Machinery.....	450.00
Paintings.....	25,030.00
Poultry (dressed and undressed).....	555.00
Pulp.....	10,287.96
Seeds.....	989.31
Sheep and lambs.....	198.04
Whisky .....	110.00
All other articles.....	14,266.48
Total.....	57,430.64
Total for same quarter in 1893..	16,675.08

*Collingwood.*

Animals for breeding purposes.....	\$125.00
Apples (evaporated or green).....	6,370.25
Barley.....	71,981.69
Eggs.....	6,923.68
Emigrants' effects.....	2,122.70
Fish (fresh and salted).....	7,024.65
Grain (oats, rye, wheat, and buck- wheat).....	481.12
Hay and straw.....	150.95
Laths and shingles.....	13,484.12
Lumber .....	84,331.74
Mica (crude and cut).....	167.37
Pease (whole and split).....	2,505.00
Potatoes.....	3,093.65
Pulp.....	304.92
Returned United States products.....	442.55
Seeds.....	643.49
Sheep and lambs.....	9,403.50
Wool.....	1,140.00
All other articles.....	1,015.17
Total.....	211,711.95
Total for same quarter in 1893..	149,748.05

*Fort Erie.*

Animals for breeding purposes.....	\$2,350.00
Apples (evaporated or green).....	1,985.00
Barley .....	4,958.15
Eggs.....	156.00
Emigrants' effects.....	1,550.00
Fish (fresh and salted).....	799.44
Grain (oats, rye, wheat, and buck- wheat).....	8,450.00
Hay and straw.....	260.00
Hides and skins.....	140.00
Horses.....	1,845.00
Logs and timber.....	3,960.00
Lumber .....	790.16
Machinery.....	1,526.40
Poultry (dressed and undressed).....	1,130.00
Seeds.....	20,595.51
Sheep and lambs.....	2,480.63
All other articles.....	1,222.40
Total.....	54,198.69
Total for same quarter in 1893..	45,052.00

*Goderich.*

Apples (evaporated or green).....	\$3,628.25
Barley .....	1,566.00
Emigrants' effects.....	1,317.00
Fish (fresh and salted).....	857.98
Flax and tow.....	7,888.30
Hay and straw .....	147.00
Horses.....	3,589.50
Lumber.....	135.00
Potatoes.....	306.00
Sheep and lambs.....	19,081.60
Shooks, staves, headings, and bolts...	333.42
Wool.....	1,772.00
All other articles.....	308.20
Total.....	40,930.25
Total for same quarter in 1893..	34,180.12

*Guelph.*

Animals for breeding purposes.....	\$83.00
Apples (evaporated or green).....	439.60
Emigrants' effects.....	2,785.35
Horses.....	853.00
Pease (whole and split).....	274.00
Potatoes.....	556.75
Sheep and lambs.....	18,462.70
Wool.....	2,095.80
All other articles.....	1,914.62
Total.....	27,464.82
Total for same quarter in 1893..	29,490.79

*Hamilton.*

Animals for breeding purposes.....	\$408.00
Apples (evaporated or green).....	4,824.10
Barley .....	13,564.00
Eggs.....	15,017.46
Emigrants' effects.....	20,963.75
Fertilizers .....	1,542.43
Grain (oats, rye, wheat, and buck- wheat).....	6,629.89
Hides and skins.....	14,518.30
Horses.....	1,420.00



Laths and shingles.....	\$3,469.39
Lumber .....	7,261.52
Machinery.....	4,133.84
Potatoes.....	240.00
Rags and paper stock.....	883.30
Returned United States products.....	2,431.42
Seeds.....	2,187.80
Sheep and lambs.....	18,911.50
Wool.....	177,255.31
Ivory buttons and nuts.....	6,852.48
Tobacco.....	912.00
All other articles.....	8,962.76
Total.....	312,388.23
Total for same quarter in 1893..	121,466.24

*Kingston.*

Animals for breeding purposes.....	\$30.00
Barley .....	31,260.68
Emigrants' effects.....	2,510.65
Fish (fresh and salted).....	2,044.92
Furs .....	2,190.60
Grain (oats, rye, wheat, and buck- wheat).....	815.77
Ginseng .....	2,403.62
Hay and straw.....	5,864.11
Hides and skins.....	7,148.33
Horses.....	349.00
Laths and shingles.....	5,331.00
Lumber .....	8,796.00
Mica (crude and cut).....	1,262.01
Pease (whole and split).....	2,000.00
Poles and posts.....	545.70
Returned United States products.....	650.00
Sheep and lambs.....	1,394.50
Ties (railroad).....	3,101.20
Tobacco.....	390.72
All other articles.....	930.00
Total.....	79,008.80
Total for same quarter in 1893..	59,602.25

*London.*

Animals for breeding purposes.....	\$3,519.50
Apples (evaporated or green).....	11,345.85
Beans .....	493.62
Eggs .....	4,658.62
Emigrants' effects.....	9,380.00
Fertilizers .....	1,531.88
Flax and tow.....	4,539.21
Hides and skins.....	12,669.21
Horses .....	7,169.50
Jewelers' sweepings.....	300.00
Lumber .....	1,313.85
Rags and paper stock.....	1,217.10
Returned United States products.....	3,326.53
Sheep and lambs.....	12,668.53
Shooks, staves, headings, and bolts...	1,545.00
Wool.....	2,094.73
Tobacco.....	4,890.36
All other articles.....	6,398.61
Total.....	89,062.10
Total for same quarter in 1893..	53,607.43

*Morrisburgh.*

Animals for breeding purposes.....	\$17.50
Apples (evaporated or green).....	222.00
Eggs .....	4,096.40
Emigrants' effects.....	2,636.65
Hay and straw.....	4,589.00
Hides and skins.....	1,233.07
Horses.....	595.00
Lumber .....	774.20
Returned United States products.....	9,039.85
Sheep and lambs.....	1,448.54
All other articles.....	34.75
Total.....	27,419.46
Total for same quarter in 1893..	21,371.84

*Orillia.*

Emigrants' effects.....	\$92.00
Furs .....	3,727.25
Laths and shingles.....	25,324.89
Lumber .....	57,725.74
Nickel matte.....	109,970.18
Potatoes.....	243.70
All other articles.....	1,584.00
Total.....	198,667.76
Total for same quarter in 1893..	83,454.82

*Ottawa.*

Beans.....	\$108.47
Emigrants' effects.....	5,809.50
Fertilizers .....	3,410.00
Furs .....	316.20
Grain (oats, rye, wheat, and buck- wheat).....	395.73
Hay and straw.....	1,704.46
Hides and skins.....	12,980.62
Laths and shingles.....	15,122.26
Logs and timber .....	267.22
Lumber .....	666,745.02
In bond for export.....	860.27
Mica (crude and cut).....	10,105.11
Pease (whole and split).....	1,041.85
Pickets and palings.....	13,493.69
Poultry (dressed and undressed).....	1,027.77
Pulp.....	26,397.44
Returned United States products.....	2,380.00
Sheep and lambs.....	34,651.02
Ties (railroad).....	2,440.93
Wood (pulp).....	214.28
All other articles.....	3,716.03
Total.....	803,097.87
Total for same quarter in 1893..	1,037,535.38

*Palmerston.*

Animals for breeding purposes.....	\$210.00
Apples (evaporated or green).....	7,854.75
Barley.....	3,473.67
Eggs .....	4,267.60
Emigrants' effects.....	2,585.95
Fish (fresh and salted).....	7,231.20
Grain (oats, rye, wheat, and buck- wheat).....	527.25
Lumber.....	25,529.44

Machinery.....	\$100.00
Poles and posts.....	360.50
Poultry (dressed and undressed).....	19.00
Sheep and lambs.....	119,567.50
Wool.....	18,293.00
All other articles.....	585.01
Total.....	190,604.87
Total for same quarter in 1893..	177,578.05

*Port Hope.*

Animals for breeding purposes.....	\$3,000.00
Apples (evaporated or green).....	2,379.70
Barley.....	31,389.88
Beans.....	2,458.00
Eggs.....	10,312.52
Emigrants' effects.....	6,184.00
Fertilizers.....	642.22
Grain (oats, rye, wheat, and buck- wheat).....	32,641.38
Hides and skins.....	9,150.00
Horses.....	1,656.00
Laths and shingles.....	247.50
Lumber.....	4,455.06
Pease (whole and split).....	57,401.71
Returned United States products.....	797.58
Seeds.....	3,438.83
Sheep and lambs.....	6,476.00
Wool.....	6,161.00
All other articles.....	964.82
Total.....	179,756.20
Total for same quarter in 1893..	210,015.02

*Port Rowan.*

Apples (evaporated or green).....	\$10,307.60
Barley.....	1,164.00
Eggs.....	9.00
Emigrants' effects.....	1,877.10
Fish (fresh and salted).....	275.80
Grain (oats, rye, wheat, and buck- wheat).....	200.25
Lumber.....	573.52
Pease (whole and split).....	644.35
Poultry (dressed and undressed).....	92.50
Rags and paper stock.....	1,295.43
Seeds.....	2,850.11
Sheep and lambs.....	13,763.60
Wool.....	4,200.00
All other articles.....	544.45
Total.....	37,797.60
Total for same quarter in 1893..	22,725.83

*Port Sarnia.*

Animals for breeding purposes.....	\$2,119.00
Apples (evaporated or green).....	5,789.00
Barley.....	2,288.57
Emigrants' effects.....	6,263.00
Flax and tow.....	2,694.00
Grain (oats, rye, wheat, and buck- wheat).....	3,337.30
Hides and skins.....	3,875.69
Horses.....	12,230.00
Logs and timber.....	859.00

Rags and paper stock.....	\$245.00
Seeds.....	2,000.00
Sheep and lambs.....	1,080.85
Shooks, staves, headings, and bolts...	4,580.41
All other articles.....	120.00
Total.....	47,481.82
Total for same quarter in 1893..	54,181.60

*Port Stanley and St. Thomas.*

Apples (evaporated and green).....	\$11,562.00
Beans.....	27,764.00
Eggs.....	7,515.00
Emigrants' effects.....	4,338.00
Grain (oats, rye, wheat, and buck- wheat).....	3,001.00
Lumber.....	686.00
Sheep and lambs.....	57,270.00
Shooks, staves, headings, and bolts...	23,810.00
All other articles.....	3,909.32
Total.....	139,849.32
Total for same quarter in 1893..	147,263.43

*Prescott.*

Animals for breeding purposes.....	\$500.00
Apples (evaporated or green).....	674.75
Chemical products.....	8,057.27
Eggs.....	390.00
Emigrants' effects.....	502.50
Hay and straw.....	1,896.45
Horses.....	1,787.50
Laths and shingles.....	150.00
Lumber.....	285.95
Potatoes.....	1,365.63
Poultry (dressed and undressed).....	2,634.78
Sheep and lambs.....	3,604.00
Whisky and gin bottles.....	1,845.80
Wool.....	805.70
All other articles.....	5,257.68
Total.....	22,758.01
Total for same quarter in 1893..	225,554.02

*Sault Ste. Marie.*

Apples (evaporated or green).....	\$1,123.70
Emigrants' effects.....	1,202.00
Fish (fresh and salted).....	6,944.20
Horses.....	4,942.50
Lumber.....	31,936.13
Wood (pulp).....	18,825.00
All other articles.....	530.10
Total.....	65,503.63
Total for same quarter in 1893..	221,634.93

*Stratford.*

Apples (evaporated or green).....	\$1,139.30
Barley.....	12,831.91
Eggs.....	2,784.00
Emigrants' effects.....	4,915.15
Flax and tow.....	41,034.92
Grain (oats, rye, wheat, and buck- wheat).....	6,607.86

Hay and straw.....	\$425.00
Horses.....	1,370.00
Lumber.....	650.68
Oil cake.....	13,875.81
Poultry (dressed and undressed).....	888.92
Rags and paper stock.....	584.03
Seeds.....	1,415.81
Shooks, staves, headings, and bolts...	40,922.70
All other articles.....	386.50
Total.....	129,832.59
Total for same quarter in 1893..	89,285.68

*Toronto.*

Animals for breeding purposes.....	\$8,426.00
Apples (evaporated or green).....	5,673.55
Barley.....	288,716.83
Books.....	5,907.79
Chemical products.....	6,578.33
Eggs.....	840.00
Emigrants' effects.....	56,407.00
Fertilizers.....	8,430.65
Grain (oats, rye, wheat, and buck- wheat).....	32,409.33
Gold.....	2,569.00
Hay and straw.....	130.00
Hides and skins.....	24,038.58
Horses.....	6,307.50
Jewelers' sweepings.....	1,300.00
Laths and shingles.....	5,679.48
Leather.....	1,335.13
Lumber.....	58,129.02
Paintings.....	22,853.00
Pease (whole and split).....	13,631.63
Poultry (dressed and undressed).....	996.30
Seeds.....	117,363.95
Sheep and lambs.....	978.00
Whisky.....	4,639.88
Wool.....	54,462.64
Tobacco.....	5,065.60
All other articles.....	10,240.15
Total.....	743,109.34
Total for same quarter in 1893..	439,541.99

*Wallaceburgh.*

Apples (evaporated or green).....	\$362.00
Barley.....	784.74
Beans.....	18.70
Eggs.....	3.00
Emigrants' effects.....	177.00
Grain (oats, rye, wheat, and buck- wheat).....	1,442.60
Hay and straw.....	1,574.79
Logs and timber.....	10,697.50
Seeds.....	5,810.50
Sheep and lambs.....	1,405.20
Shooks, staves, headings, and bolts...	44,532.40
Wood (cord).....	7,520.25
All other articles.....	715.00
Total.....	74,335.83
Total for same quarter in 1893..	97,283.23

*Windsor.*

Animals for breeding purposes.....	\$2,370.00
Apples (evaporated or green).....	3,386.10
Beans.....	39,276.06
Eggs.....	7,762.98
Emigrants' effects.....	9,829.90
Grain (oats, rye, wheat, and buck- wheat).....	901.33
Hay and straw.....	162.00
Horses.....	2,895.00
Logs and timber.....	30,881.50
Lumber.....	2,514.11
Oil.....	1,873.51
Poles and posts.....	3,353.80
Rags and paper stock.....	60.00
Seeds.....	1,043.39
Sheep and lambs.....	590.00
Shooks, staves, headings, and bolts...	16,394.72
Whisky.....	69,112.10
Tobacco.....	1,466.75
All other articles.....	1,554.74
Total.....	195,420.99
Total for same quarter in 1893..	132,500.62

*Total from province of Ontario.*

Animals for breeding purposes.....	\$26,000.50
Apples (evaporated or green).....	92,081.28
Barley.....	542,612.40
Beans.....	149,668.61
Books.....	5,907.79
Chemical products.....	14,635.60
Eggs.....	69,103.52
Emigrants' effects.....	155,438.35
Fertilizers.....	15,760.18
Fish (fresh and salted).....	25,524.08
Flax and tow.....	56,156.43
Furs.....	6,534.05
Grain (oats, rye, wheat, and buck- wheat).....	113,775.44
Ginseng.....	2,403.62
Gold.....	2,563.00
Hay and straw.....	23,630.76
Hides and skins.....	106,564.20
Horses.....	48,422.00
Jewelers' sweepings.....	3,073.35
Laths and shingles.....	84,789.13
Leather.....	1,335.13
Logs and timber.....	54,297.72
Lumber.....	1,131,604.54
In bond for export.....	865.27
Mica (crude and cut).....	11,647.37
Nickel matte.....	109,970.18
Machinery.....	6,210.24
Paintings.....	47,878.00
Oil.....	1,873.51
Oil cake.....	13,875.81
Pease (whole and split).....	180,367.30
Pickets and palings.....	13,493.69
Poles and posts.....	9,262.25
Potatoes.....	5,805.73
Poultry (dressed and undressed).....	8,277.55
Pulp.....	36,990.32
Rags and paper stock.....	4,284.86

Returned United States products.....	\$20,490.27
Seeds.....	160,956.32
Sheep and lambs.....	336,237.76
Shooks, staves, headings, and bolts...	196,984.82
Ties (railroad).....	12,214.07
Whisky.....	73,861.98
Whisky and gin bottles.....	1,845.80
Wood :	
Cord.....	7,595.25
Pulp.....	21,027.28
Wool.....	270,774.46
Ivory buttons and nuts.....	6,852.48
Tobacco.....	12,725.43
All other articles.....	69,202.85
Total.....	4,373,453.53
Total for same quarter in 1893..	3,945,053.77
Increase.....	428,399.76

## PROVINCE OF QUEBEC.

[Report by Consul-General Anderson.]

*Coaticook.*

Animals :	
Breeding .....	\$4,200.00
Horses.....	1,760.00
Lambs.....	3,561.00
Articles, the growth, produce, and manufacture of the United States, returned.....	658.00
Bark, hemlock.....	240.00
Hay.....	473.00
Hides and skins :	
Sheepskins .....	185.00
All other.....	192.00
Household and personal effects.....	6,740.00
Ores (copper).....	4,077.00
Sundries.....	20.00
Wood and manufactures of :	
Lumber .....	688.00
Shingles.....	236.00
All other.....	8,044.00
Total.....	31,254.00
Total for same quarter in 1893..	41,317.00
Decrease.....	10,063.00

*Gaspe Basin.*

Eggs.....	\$296.45
Sundries.....	41.80
Wood and manufactures of :	
Railway ties.....	7,203.60
Shingles.....	1,230.00
Total.....	8,771.85
Total for same quarter in 1893..	857.13
Increase.....	7,914.72

*Montreal.*

Animals :	
Breeding cattle.....	\$2,100.00
Horses.....	32,208.48

## Animals—Continued.

Lambs .....	\$1,645.40
All other.....	313.32
Articles, the growth, produce, and manufacture of the United States, returned.....	10,346.34
Books.....	1,050.03
Carpets.....	1,272.04
Carriages.....	170.00
Chemicals, drugs, dyes, etc. :	
Ashes (pot).....	2,620.12
Bone black.....	4,039.51
Coal tar.....	627.20
Dyes.....	2,281.24
Gas liquor.....	2,040.97
Ginseng.....	3,293.25
Balsam.....	639.54
Powder—	
Bleaching.....	484.50
Washing .....	282.51
Sirup of turpentine.....	400.00
All other.....	477.20
Cartridges.....	2,144.51
Clays and mineral substances :	
Apatite, ground.....	712.75
Asbestos.....	20,367.50
Cement.....	3,172.00
Church goods.....	1,259.75
Eggs.....	8,569.00
Fertilizers .....	2,942.19
Fish (salt).....	1,350.00
Furs and fur skins :	
Furs—	
Raw .....	948.00
Cuttings.....	217.05
Dressed.....	4,603.36
All other.....	121.00
Hair :	
Plastering.....	635.13
All other.....	1,315.32
Hay.....	2,896.24
Hides and skins :	
Calfskins.....	2,227.30
Goatskins.....	798.79
All other.....	1,273.28
Household and personal effects.....	26,731.00
Iron and steel.....	2,732.23
Jewelers' sweepings.....	1,100.00
Junk.....	1,128.57
Linen.....	1,123.30
Paintings.....	98,715.50
Paper stock.....	5,605.85
Platinum.....	225.25
Sleighs.....	1,435.00
Spirits, distilled.....	4,326.78
Sugar (maple).....	46.80
Sundries.....	5,379.64
Statuary.....	1,173.51
Tobacco :	
Leaf.....	48,556.56
All other.....	70.00
Tea.....	191,189.97
Vegetables :	
Cabbages.....	200.40
Onions.....	4,208.25

Wool.....	\$11,960.63
Woolen rags.....	1,898.02
Wood and manufactures of:	
Lumber.....	120,544.63
Pulp wood.....	1,389.50
Match blocks.....	5,443.00
All other.....	5,304.61
Total.....	662,333.82
Total for same quarter in 1893..	242,466.58
Increase.....	419,867.24

*Quebec.*

Animals (horses).....	\$100.00
Articles, the growth, produce, and manufacture of the United States, returned.....	2,352.30
Chemicals, drugs, dyes, etc.....	6,450.02
Clays and mineral substances (as- bestos).....	20,937.50
Fish (salt).....	3,083.48
Blueberries.....	3,019.46
Furs (dressed).....	1,217.40
Hair.....	30.00
Household and personal effects.....	2,630.45
Old rubber.....	627.73
Paper stock.....	500.11
Sleighs.....	320.00
Sea grass.....	2,771.40
Sugar (maple).....	2,371.53
Sundries.....	1,610.16
Vegetables (potatoes).....	590.00
Wool.....	40,411.58
Wood and manufactures of:	
Lumber.....	69,150.18
Pulp wood.....	1,782.20
Railway ties.....	1,625.00
All other.....	117.00
Total.....	161,697.50
Total for same quarter in 1893..	162,217.25
Decrease.....	519.75

*Sherbrooke.*

Animals:	
Horses.....	\$493.00
Lambs.....	14,042.50
Articles, the growth, produce, and manufacture of the United States, returned.....	3,394.58
Bark, hemlock.....	560.00
Chemicals, drugs, dyes, etc.....	3,148.00
Clays and mineral substances:	
Asbestos.....	26,476.95
All other.....	108.00
Hay.....	277.00
Hides and skins.....	2,191.25
Household and personal effects.....	9,262.75
Ores:	
Sulphur.....	13,926.00
Copper.....	863.94
All other.....	7,670.00
Provisions.....	15.00

Sundries.....	\$2,083.69
Wood and manufactures of:	
Lumber.....	94,700.00
Pulp wood.....	1,852.00
Shingles.....	1,137.00
Wood pulp.....	3,262.50
All other.....	476.00
Total.....	186,000.16
Total for same quarter in 1893..	172,030.00
Increase.....	13,970.16

*St. Hyacinthe.*

Animals (horses).....	\$1,662.00
Articles, the growth, produce, and manufacture of the United States, returned.....	200.00
Bark, hemlock.....	380.00
Chemicals, drugs, dyes, etc.....	96.60
Hay.....	11,205.00
Household and personal effects.....	9,007.50
Vegetables (potatoes).....	180.00
Wood and manufactures of:	
Lumber.....	47,083.49
Pulp wood.....	735.00
Shingles.....	276.75
Wood pulp.....	94.24
Total.....	70,920.58
Total for same quarter in 1893..	60,641.32
Increase.....	10,279.26

*St. Johns.*

Animals:	
Horses.....	\$575.00
Lambs.....	506.00
All other.....	808.10
Articles, the growth, produce, and manufacture of the United States, returned.....	181.20
Books.....	50.00
Buckwheat.....	487.50
Hay.....	15,817.50
Hides and skins.....	6.00
Household and personal effects.....	4,279.75
Provisions.....	142.50
Wood and manufactures of:	
Lumber.....	28,731.41
Pulp wood.....	428.00
Wood pulp.....	15.00
Total.....	52,027.96
Total for same quarter in 1893..	56,955.63
Decrease.....	4,927.67

*Stanbridge.*

Animals:	
Horses.....	\$686.75
Lambs.....	1,164.40
All other.....	512.50
Coal.....	50.00
Hay.....	2,236.50
Hides and skins.....	1,000.00

Household and personal effects.....	\$2,616.00
Iron and steel.....	1,040.00
Wood and manufactures of:	
Lumber.....	10,846.59
Railway ties.....	1,506.00
Shingles.....	74.70
All other.....	3,600.00
Total.....	25,333.44
Total for same quarter in 1893..	11,302.70
Increase.....	14,030.74

*Three Rivers.*

Animals:	
Horses.....	\$101.40
Lambs.....	2,105.50
Bark, hemlock.....	156.00
Clays and mineral substances.....	300.00
Hair.....	270.00
Hay.....	3,084.89
Hides and skins.....	914.25
Household and personal effects.....	6,945.35
Iron and steel.....	720.00
Ores.....	296.40
Sundries.....	4.50
Wood and manufactures of:	
Lumber.....	113,303.55
Pulp wood.....	14,707.30
Railway ties.....	2,634.80
Shingles.....	7,396.02
Wood pulp.....	13,356.93
All other.....	1,893.50
Total.....	168,190.39
Total for same quarter in 1893..	112,384.58
Increase.....	55,805.81

*Total from province of Quebec.*

Animals:	
Breeding.....	\$4,200.00
Cattle.....	2,100.00
Horses.....	37,586.63
Lambs.....	3,024.80
All other.....	1,633.92
Articles, the growth, produce, and manufacture of the United States, returned.....	17,132.42
Bark, hemlock.....	1,336.00
Books.....	1,100.03
Buckwheat.....	487.50
Carpets.....	1,272.04
Carriages.....	170.00
Chemicals, drugs, dyes, etc.:	
Ashes (pot).....	2,620.12
Bone black.....	4,039.51
Coal tar.....	627.20
Dyes.....	2,281.24
Gas liquor.....	2,040.97
Ginseng.....	3,293.25
Balsam.....	639.54
Powder—	
Bleaching.....	484.50
Washing.....	282.51

Chemicals, drugs, dyes, etc.—Cont'd.	
Sirup of turpentine.....	\$400.00
All other.....	10,171.82
Cartridges.....	2,144.51
Coal.....	50.00
Clays and mineral substances:	
Apatite, ground.....	712.75
Asbestos.....	68,081.95
Cement.....	3,172.00
All other.....	108.00
Church goods.....	1,259.75
Eggs.....	8,865.45
Fertilizers.....	2,942.19
Fish (salt).....	4,433.48
Fruits (blueberries).....	3,019.46
Furs and fur skins:	
Furs—	
Raw.....	948.00
Cuttings.....	217.05
Dressed.....	5,820.76
All other.....	121.00
Hair:	
Plastering.....	905.13
All other.....	1,345.32
Hay.....	35,990.13
Hides and skins:	
Calfskins.....	2,227.30
Goatskins.....	798.79
Sheepskins.....	185.00
All other.....	5,576.78
Household and personal effects.....	68,212.80
Iron and steel.....	4,492.23
Jewelers' sweepings.....	1,100.00
Junk.....	1,128.57
Linen.....	1,123.30
Ores:	
Sulphur.....	13,926.00
Copper.....	4,940.94
All other.....	7,966.40
Old rubber.....	627.73
Paintings.....	98,715.50
Paper stock.....	6,105.96
Platinum.....	225.25
Provisions.....	157.50
Sleighs.....	1,755.00
Spirits, distilled.....	4,326.78
Sea grass.....	2,771.40
Sugar (maple).....	2,418.33
Sundries.....	9,139.79
Statuary.....	1,173.51
Tobacco:	
Leaf.....	48,556.56
All other.....	70.00
Tea.....	192,189.97
Vegetables:	
Cabbages.....	200.40
Onions.....	4,208.25
Potatoes.....	770.00
Wool.....	52,372.21
Woolen rags.....	1,898.02
Wood and manufactures of:	
Lumber.....	485,227.85
Pulp wood.....	20,894.00
Railway ties.....	12,969.40
Match blocks.....	5,443.00

## Wood and manufactures of—Cont'd.

Shingles .....	\$10,410.47
Wood pulp.....	16,728.67
All other.....	19,435.11
Total .....	1,366,529.70
Total for same quarter in 1893..	860,172.19
Increase .....	506,357.51

## FRENCH NORTH AMERICAN POSSESSIONS.

*St. Pierre (Miquelon).*

[Report by Commercial Agent Steer.]

Dry codfish (20,240.34 quintals).....	\$63,485.30
Whale oil (9 barrels=450 gallons).....	92.50
Total.....	63,577.80

## CEYLON.

[Report by Consul Morey.]

*Colombo.*

Cinnamon .....	\$4,488.00
Cocoa .....	1,580.00
Cocoanuts :	
Desiccated .....	5,943.00
Oil .....	98,811.00
Coffee .....	1,457.00
Copra, prepared.....	7,095.00
Medicinal seeds.....	2,734.00
Plumbago .....	56,038.00
Tea.....	9,202.00
Senna .....	681.00
Total.....	188,029.00
Total for same quarter in 1893..	47,342.00
Increase.....	140,687.00

*Galle.*

Citronella oil.....	\$20,745.00
Cocoanuts (oil).....	36,165.00
Coir (yarn).....	2,430.00
Plumbago .....	2,456.00
Total.....	61,796.00

*Total from Ceylon.*

Cinnamon .....	\$4,488.00
Citronella oil.....	20,745.00
Cocoa .....	1,580.00
Cocoanuts :	
Desiccated .....	5,943.00
Oil .....	134,976.00
Coffee .....	1,457.00
Coir (yarn).....	2,430.00
Copra, prepared.....	7,095.00
Medicinal seeds.....	2,734.00
Plumbago .....	58,494.00
Tea.....	9,202.00
Senna .....	681.00
Total.....	249,825.00
Total for same quarter in 1893..	47,342.00
Increase.....	202,483.00

## DANISH WEST INDIES.

[Report by Consul Stewart.]

*St. Thomas.*

Bay oil.....	\$65.01
Bay rum.....	2,967.90
Bay spirit.....	189.61
Rum.....	267.88
Skins (goat).....	212.38
Turtle shell.....	1,666.75
Total.....	5,369.53

*Christiansted (St. Croix).*

Limes.....	\$5.00
Rum.....	1,658.44
Sugar.....	1,551.23
Total.....	3,214.67

*Fredericksted (St. Croix).*

Rum.....	\$1,785.53
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*Total from Danish West Indies.*

Bay oil.....	\$65.01
Bay rum.....	2,967.90
Bay spirit.....	189.61
Limes.....	5.00
Rum.....	3,711.85
Skins (goat).....	212.38
Sugar.....	1,551.23
Turtle shell.....	1,666.75
Total.....	10,369.73

## DENMARK.

[Report by Consul Kirk.]

*Copenhagen.*

Annotto.....	\$146.66
Bagging.....	133.69
Books.....	343.15
Brandy (cherry).....	1,160.17
Cabbage.....	36,212.10
Cement.....	31,531.77
Flint stones.....	911.36
Glass and wooden goods.....	154.97
Glue.....	1,807.41
Gold watches.....	233.16
Household goods.....	1,405.60
Machinery.....	1,972.88
Music.....	309.78
Porcelain and terra cotta.....	5,569.45
Rags.....	1,130.08
Rape oil.....	4,020.07
Rennet.....	2,634.38
Roots and bulbs.....	241.20
Rope, old.....	1,045.86
Rubber shoes, old.....	278.83
Seeds.....	9,339.84
Skins.....	4,571.42
Miscellaneous.....	177.65

Total.....	105,331.48
Total for same quarter in 1893..	43,164.05

Increase.....	62,167.43
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## DUTCH WEST INDIES.

[Report by Consul Smith.]

*Curaçao.*

Aloes.....	\$9,873.78
Coffee.....	8,751.20
Divi-divi.....	1,811.52
Hides and skins.....	13,599.78
Salt.....	1,860.00
Straw hats.....	314.74
Sundries.....	114.00
Wood.....	4,244.68
Wool.....	86.40
<b>Total.....</b>	<b>40,656.10</b>
<b>Total for same quarter in 1893..</b>	<b>14,675.52</b>

## FRANCE.

[Report by Consul-General Morss.]

*Bordeaux (including Pau).*

Argols.....	\$34,076.00
Books, prints, etc.....	697.00
Brandy and liqueurs.....	27,504.00
Capsules for closing bottles.....	9,004.00
Cheese.....	2,699.00
Chemicals.....	1,760.00
Glycerin.....	5,410.00
Gum.....	21,424.00
Hair (animal).....	1,079.00
Macaroni.....	12,873.00
Mineral water.....	4,071.00
Mustard.....	2,203.00
Nuts.....	82,282.00
Olive oil.....	66,205.00
Ores.....	1,283.00
Paper.....	34,646.00
Preserves:	
Fish (sardines, etc.).....	124,450.00
Fruits and vegetables.....	114,991.00
Meat.....	6,141.00
Prunes.....	338,662.00
Rags.....	16,548.00
Skins.....	36,393.00
Straw goods.....	203.00
Sugar and confectionery (candies).....	1,566.00
Truffles.....	3,473.00
Vanilla.....	1,277.00
Vinegar.....	1,412.00
Wine.....	302,262.00
Wool.....	166,058.00
All other articles.....	7,699.00
<b>Total.....</b>	<b>1,428,351.00</b>
<b>Total for same quarter in 1893..</b>	<b>877,014.00</b>
<b>Increase.....</b>	<b>551,337.00</b>

*Calais (including Boulogne-sur-mer).*

Laces.....	\$737,237.00
Poppy oil.....	116.00
<b>Total.....</b>	<b>737,353.00</b>

*Cognac.*

Brandy.....	\$227,894.00
Paper.....	213.00
Rags.....	1,004.00
Wine.....	184.00
<b>Total.....</b>	<b>229,295.00</b>
<b>Total for same quarter in 1893..</b>	<b>136,540.00</b>
<b>Increase.....</b>	<b>92,755.00</b>

*Grenoble.*

Brandy.....	\$12,795.00
Cheese.....	17,765.00
Gloves.....	316,246.00
Macaroni.....	1,562.00
Nuts.....	52,788.00
Skins.....	12,187.00
Wool.....	1,803.00
All other articles.....	556.00
<b>Total.....</b>	<b>415,702.00</b>
<b>Total for same quarter in 1893..</b>	<b>170,605.00</b>
<b>Increase.....</b>	<b>245,097.00</b>

*Havre (including Cherbourg, Honfleur, Rennes, and St. Malo).*

Art, works of.....	\$10,803.00
Books.....	2,514.00
Brandy (liqueurs).....	18,905.00
Bristles.....	15,281.00
Cheese.....	16,606.00
Chemicals.....	3,206.00
Coffee.....	11,905.00
Drugs.....	519.00
Dyes.....	26,505.00
Feathers.....	3,993.00
Furniture and personal effects.....	2,157.00
Glassware.....	39.00
Grease, stearin, etc.....	1,437.00
Hair (animal).....	277.00
Hardware (cutlery).....	93.00
Horses and buffaloes.....	2,169.00
Indigo.....	3,565.00
Jewelry.....	1,544.00
Nacker.....	2,018.00
Nickel.....	3,741.00
Nuts.....	12,281.00
Oils.....	3,074.00
Paints and colors.....	1,309.00
Preserves:	
Vegetables (beans, etc.).....	2,316.00
Snails.....	350.00
Rags and old rope.....	5,669.00
Rubber.....	10,556.00
Seeds and plants.....	20,489.00
Skins and hides.....	23,100.00
Stone (flint).....	444.00
Sugar and confectionery.....	436.00
Wine.....	747.00
Wool.....	27,420.00
Woolen cloth.....	2,364.00
<b>Total.....</b>	<b>237,832.00</b>
<b>Total for same quarter in 1893..</b>	<b>588,627.00</b>
<b>Decrease.....</b>	<b>350,795.00</b>



*Limoges.*

Brandy (liqueurs) .....	\$756.00
China .....	279,293.00
Hair :	
Human.....	389.00
Animal.....	5,858.00
Rags.....	192.00
Truffles .....	2,070.00
Total.....	288,558.00
Total for same quarter in 1893..	189,509.00
Increase.....	99,049.00

*Lyons (including Dijon).*

Argols.....	\$96,858.00
Art, works of (bronzes).....	249.00
Brandy.....	4,802.00
Candle wicks .....	487.00
Church ornaments and metallic trim- mings .....	47,377.00
Cotton goods .....	701.00
Dyestuffs.....	8,310.00
Fancy goods.....	1,292.00
Flowers, artificial.....	284.00
Glass, plate.....	3,975.00
Glue.....	12,957.00
Hardware, machinery, and tools.....	5,730.00
Hatters' fur.....	5,955.00
Laces, linen.....	12,497.00
Macaroni.....	17,552.00
Marbles for mosaics.....	2,354.00
Mineral water.....	5,356.00
Musical instruments.....	1,080.00
Optical goods (spectacles).....	1,936.00
Pasteboard.....	638.00
Preserved fruits.....	6,163.00
Seeds and plants.....	631.00
Silk :	
Raw .....	261,903.00
Spun.....	1,881.00
Waste.....	140,259.00
Manufactures—	
Handkerchiefs, flags, etc.....	3,536.00
Piece goods.....	815,490.00
Pongees and foulards.....	325,520.00
Ribbons.....	21,489.00
Tulles, crepes, etc.....	306,138.00
Velvets, plush, etc.....	103,487.00
Skins and leather (caifskins).....	16,701.00
Smokers' articles (pipes).....	16,336.00
Terra alba.....	372.00
Thread (gold).....	738.00
Watches.....	11,143.00
Wines and liquors.....	50,809.00
Woolen goods.....	284.00
Total.....	2,313,279.00
Total for same quarter in 1893..	1,642,241.00
Increase.....	671,038.00

*Marseilles (including Bastia, Cette, and Toulon).*

Argols.....	\$33,076.00
Brandy (liqueurs).....	1,193.00
Chemicals .....	4,108.00

Drugs.....	\$16,474.00
Gloves .....	490.00
Glue.....	23,113.00
Glycerin.....	35,947.00
Hair (animal).....	32,370.00
Macaroni.....	27,308.00
Mineral water.....	1,781.00
Nuts.....	174,445.00
Oils.....	70,637.00
Paints and colors.....	9,082.00
Perfumery.....	4,059.00
Preserved fruits and vegetables.....	58,433.00
Rags.....	1,504.00
Rubber.....	3,512.00
Seeds.....	26,144.00
Skins, hides, and leather.....	109,872.00
Soap.....	18,446.00
Stationery (paper).....	8,770.00
Stones and cement.....	14,453.00
Terra alba.....	3,268.00
Truffles .....	423.00
Wines.....	16,517.00
Wood (brier wood, etc.).....	23,548.00
Wool.....	146,938.00
All other articles.....	9,497.00
Total.....	875,408.00
Total for same quarter in 1893..	402,017.00
Increase.....	473,391.00

*Nantes (including Angers, Brest, and Lorient).*

Books .....	\$195.00
Church ornaments.....	1,055.00
Macaroni.....	1,015.00
Mushrooms.....	2,195.00
Nuts.....	424.00
Oils.....	91.00
Paints and colors.....	1,532.00
Preserves :	
Fish (sardines, etc.).....	100,550.00
Meat.....	146.00
Vegetables (green pease, etc.).....	47,262.00
Seeds and plants.....	35,271.00
Wine.....	4,425.00
Wood ware (empty boxes).....	1,435.00
Total.....	195,596.00
Total for same quarter in 1893..	209,728.00
Decrease .....	14,132.00

*Nice (including Cannes, Mentone, and Monaco).*

Confectionery.....	\$436.00
Linen goods .....	973.00
Oil :	
Almond.....	1,435.00
Olive.....	16,398.00
Perfumery.....	214,049.00
Pottery and earthenware.....	971.00
Total.....	234,262.00
Total for same quarter in 1893..	111,137.00
Increase.....	123,125.00

*Paris.*

Albumen.....	\$5,979.00
Argols.....	27,218.00
Art, works of (paintings, bronzes, statuary, and antiquities).....	706,171.00
Blacking.....	29,229.00
Books, prints, and engravings.....	97,851.00
Boots, shoes, etc.....	992.00
Brandy and liqueurs.....	18,511.00
Bristles.....	36,929.00
Brushes.....	76,248.00
Buttons and trimmings.....	139,970.00
Carpets.....	2,600.00
Carriages and parts of.....	6,750.00
Cheese.....	1,987.00
Chemicals not elsewhere specified.....	28,722.00
Church ornaments and metallic trimmings.....	50,186.00
Clocks and watches, and materials of.....	43,497.00
Corsets.....	34,380.00
Costumes and dresses.....	50,014.00
Cotton goods.....	93,950.00
Drugs and medicinal plants.....	40,306.00
Dyestuffs.....	20,999.00
Fancy goods.....	273,657.00
Feathers and flowers (artificial and millinery).....	542,882.00
Furniture and household goods.....	166,259.00
Glassware, mirrors, china and earthen ware.....	91,574.00
Gloves.....	109,248.00
Glue and gelatin.....	33,184.00
Glycerin.....	127,416.00
Grease, tallow, and stearin.....	6,886.00
Gum (gum senegal, etc.).....	443.00
Hair:	
Human.....	6,469.00
Animal.....	21,639.00
Hardware, machinery, and manufactures of metal.....	51,745.00
Hatters' goods, furs, rabbit skins, etc.....	368,154.00
Horses.....	483.00
Hosiery.....	24,298.00
Indigo.....	7,106.00
Jewelry and precious stones.....	312,544.00
Laces, tulle, crepes, embroideries, etc.....	236,175.00
Linon goods.....	40,318.00
Macaroni and similar preparations.....	1,610.00
Merinos, cashmeres, and miscellaneous dress goods.....	610,328.00
Mineral water.....	924.00
Musical instruments.....	32,841.00
Nuts.....	1,956.00
Oils, except essential.....	1,901.00
Optical and scientific instruments.....	94,650.00
Paints, colors, and artists' supplies.....	24,004.00
Paper and stationery.....	31,028.00
Perfumery and toilet articles.....	207,197.00
Platinum.....	15,987.00
Preserves:	
Fish (sardines, etc.).....	11,650.00
Fruits and vegetables, not elsewhere specified.....	15,009.00
Meat ( <i>foie gras</i> , etc.).....	6,110.00

Rags and new cuttings, old bagging, and paper.....	\$29,212.00
Rubber and manufactures of.....	16,440.00
Seeds and plants:	
Clover.....	6,633.00
Other seeds and plants.....	147,881.00
Shawls.....	5,918.00
Silk:	
Raw, waste, etc.....	2,165.00
Manufactures of.....	218,885.00
Skins, hides, and leather.....	259,250.00
Smokers' articles, pipes, etc.....	3,496.00
Stones, marble, millstones, tiles, cement, etc.....	21,253.00
Straw goods.....	6,427.00
Sugar and confectionery.....	42,609.00
Truffles and mushrooms.....	14,510.00
Upholstery goods and wall paper.....	153,055.00
Vanilla.....	12,749.00
Vinegar.....	1,092.00
Whalebone and horn strips for corsets.....	44,036.00
Wine.....	14,709.00
Wood, wood ware, and willow ware.....	8,263.00
Wool and wool waste.....	50,102.00
Woolen cloth.....	14,703.00
All other articles.....	207,265.00
Total.....	6,268,826.00
Total for same quarter in 1893.....	4,054,705.00
Increase.....	2,214,121.00

*Rheims (including Troyes).*

Art, works of (statuary).....	\$3,734.00
Books (lithographic cards, etc.).....	107.00
Brandy and rum.....	233.00
Corsets.....	115.00
Cotton goods.....	4,273.00
Drugs.....	3,154.00
Dyes (wash blue).....	2,128.00
Fancy goods.....	233.00
Glassware (mirrors, etc.).....	33,976.00
Gloves.....	88,035.00
Hardware.....	6,501.00
Hatters' goods (rabbit skins).....	1,881.00
Hides.....	5,068.00
Hosiery.....	24,521.00
Preserved fruits.....	382.00
Rubber.....	3,229.00
Straw hats.....	128.00
Tiles.....	122.00
Tin foil.....	433.00
Wine (champagne).....	1,599,352.00
Willow ware.....	14,996.00
Woolen goods.....	1,524.00
All other articles.....	189.00
Total.....	1,794,314.00
Total for same quarter in 1893.....	1,248,313.00
Increase.....	546,001.00

*Roubaix (including Caudry, Dunkirk, and Lille).*

Art, works of (marble).....	\$1,677.00
Chalk.....	9,671.00

Carbonate of potash.....	\$2,893.00
Chemicals.....	23,307.00
Cotton goods.....	2,486.00
Flax and tow.....	89,591.00
Glass.....	2,773.00
Laces.....	26,780.00
Machinery.....	109.00
Malt.....	3,705.00
Rags.....	779.00
Seeds:	
Beet.....	7,581.00
Clover.....	840.00
Linseed.....	133,286.00
Silk waste.....	5,261.00
Smokers' articles (pipes).....	934.00
Soap grease.....	15,771.00
Tiles.....	1,960.00
Thread.....	5,679.00
Tow waste.....	8,622.00
Upholstery goods.....	91,505.00
Wool.....	193,131.00
Woolen dress goods.....	350,419.00
Yarn:	
Jute.....	12,845.00
Other.....	5,289.00
All other articles.....	478.00
Total.....	997,372.00
Total for same quarter in 1893..	735,762.00
Increase.....	261,610.00

*Rouen (including Dieppe).*

Chalk.....	\$2,414.00
Chemicals.....	1,164.00
Flour (Hungarian).....	810.00
Glycerin.....	5,916.00
Hardware (carriage trimmings).....	310.00
Lastings.....	1,854.00
Linen goods.....	556.00
Musical instruments.....	1,411.00
Stones (flints, etc.).....	1,355.00
Rabbit hair (spun).....	1,383.00
Rags and paper material.....	20,118.00
Silesia (wool and silk).....	836.00
Total.....	38,127.00
Total for same quarter in 1893..	*301,921.00
Decrease.....	263,794.00

*St. Etienne.*

Buttons and trimmings (button stock and braids).....	\$20,749.00
Cheese.....	5,955.00
Cloth.....	321.00
Confectionery.....	4,556.00
Hardware (rat traps, healds, and cutlery).....	8,676.00
Gloves.....	11,678.00
Laces.....	64,778.00
Linings.....	200.00

Macaroni.....	\$396.00
Mineral water.....	261.00
Silk:	
Raw.....	414.00
Manufactures of—	
Ribbons:	
Silk and velvet.....	134,340.00
Elastic.....	1,643.00
Piece velvet.....	1,898.00
All other articles.....	123.00
Total.....	255,988.00
Total for same quarter in 1893..	168,826.00
Increase.....	87,162.00

*Total from France.*

Albumen.....	\$5,979.00
Argols.....	191,228.00
Art, works of (paintings, bronzes, statuary, and antiquities).....	722,634.00
Blacking.....	29,229.00
Books, prints, and engravings.....	101,364.00
Boots, shoes, etc.....	992.00
Brandy and liqueurs.....	312,593.00
Bristles.....	52,210.00
Brushes.....	76,248.00
Buttons and trimmings.....	160,919.00
Capsules for closing bottles.....	9,004.00
Carpets.....	2,600.00
Carriages and parts of.....	6,750.00
Chalk.....	12,085.00
Cheese.....	45,012.00
Chemicals, not elsewhere specified....	65,160.00
Church ornaments and metallic trimmings.....	98,618.00
Clocks and watches, and materials of.....	54,640.00
Coffee.....	11,905.00
Corsets.....	34,495.00
Costumes and dresses.....	50,014.00
Cotton goods.....	101,410.00
Drugs and medicinal plants.....	60,453.00
Dyestuffs.....	57,942.00
Fancy goods.....	275,182.00
Feathers and flowers (artificial and millinery).....	547,159.00
Flax and flax waste.....	98,213.00
Furniture, household goods, etc.....	168,416.00
Glassware, mirrors, china and earthen ware.....	412,601.00
Gloves.....	525,697.00
Glue and gelatin.....	69,254.00
Glycerin.....	174,689.00
Grease, tallow, and stearin.....	8,323.00
Gum (gum senegal, etc.).....	21,867.00
Hair:	
Animal.....	61,223.00
Human.....	6,858.00
Hardware, machinery, and metal manufactures.....	73,164.00
Hatters' goods (furs, rabbit skins, etc.).....	375,990.00

\* This total includes the exports from Calais and Boulogne-sur-mer, then agencies under Rouen.

Horses.....	\$2,652.00
Hosiery.....	48,819.00
Indigo.....	10,671.00
Jewelry and precious stones.....	314,088.00
Jute yarn.....	12,845.00
Laces, veilings, tulles, crepes, and embroidery.....	1,077,467.00
Linen goods.....	41,847.00
Macaroni and similar preparations.....	62,316.00
Malt.....	3,705.00
Merinos, cashmeres, and miscellaneous dress goods.....	965,245.00
Mineral water.....	12,393.00
Musical instruments.....	35,332.00
Mustard.....	2,203.00
Nacker.....	2,018.00
Nickel.....	3,741.00
Nuts (almonds, etc.).....	324,176.00
Oils, except essential.....	159,857.00
Optical and scientific instruments.....	96,586.00
Ores.....	1,283.00
Paints, colors, and artists' supplies.....	35,927.00
Paper and stationery.....	75,295.00
Perfumery and toilet articles.....	425,305.00
Platinum.....	15,987.00
Preserves:	
Fish (sardines, etc.).....	236,650.00
Fruits and vegetables, not elsewhere specified.....	244,383.00
Meat ( <i>foi gras</i> , etc.).....	12,747.00
Prunes.....	338,835.00
Rags, new cuttings, and other paper material.....	75,025.00
Rubber.....	33,737.00
Seeds and plants:	
Clover.....	7,473.00
Other seeds and plants.....	371,283.00
Shawls.....	5,918.00
Silk:	
Raw, spun, and waste.....	411,883.00
Manufactures.....	1,932,435.00
Skins, hides, and leather.....	462,580.00
Smokers' articles, pipes, etc.....	20,766.00
Soap.....	18,446.00
Soap grease from the skins of sheep.....	15,771.00
Stones (millstones, marble, tiles, cement, etc.).....	41,941.00
Straw goods.....	6,758.00
Sugar and confectionery.....	49,603.00
Terra alba.....	3,640.00
Truffles and mushrooms.....	22,671.00
Upholstery goods and wall paper.....	244,560.00
Vanilla.....	14,026.00
Vinegar.....	2,504.00
Whalebone and horn strips for corsets.....	44,036.00
Wine.....	1,989,005.00
Wood, wooden ware, and willow ware.....	48,503.00
Wool and wool waste.....	585,452.00
Woolen cloth.....	17,388.00
All other articles.....	240,366.00
Total.....	16,310,263.00
Total for same quarter in 1893.....	10,836,945.00
Increase.....	5,473,318.00

## GERMANY.

FRANKFORT AND CONSULATES THERE-  
UNDER.

[Report by Consul-General Mason.]

*Aix la Chapelle.*

Books, stationery, photographs, and paper ware.....	\$64,762.21
Buttons and button stuffs, etc.....	8,277.78
China, glass, porcelain, stone, and earthen ware.....	1,926.29
Dyes, drugs, chemicals, etc.....	55,930.56
Linen, woolen, and cotton goods.....	162,544.40
Mineral water.....	3,552.15
Pins and needles, hooks and eyes.....	33,355.74
Sundries.....	907.75
Total.....	331,256.88
Total for same quarter in 1893.....	302,677.33

*Bamberg.*

Baskets and basket ware.....	\$44,546.80
Carbons, electric.....	682.54
China, glass, porcelain, stone, and earthen ware.....	18,372.72
Dyes, drugs, chemicals, etc.....	799.82
Hops.....	64,546.71
Oil and glass paintings and chromos.....	1,502.73
Pins and needles, hooks and eyes.....	29,078.65
Wine, brandy, beer, and liquors.....	3,938.44
Total.....	134,389.76
Total for same quarter in 1893.....	68,405.78

*Barmen.*

Braids, bindings, trimmings, etc.....	\$248,650.64
Books, stationery, photographs, and paper ware.....	14,793.39
Buttons and button stuffs, etc.....	25,686.97
Dyes, drugs, chemicals, etc.....	247,952.62
Fancy goods and toys.....	21,500.40
Hatbands and ribbons.....	268,363.49
Ironware, steel, cutlery, etc.....	335,694.81
Linen, woolen, and cotton goods.....	129,281.40
Machinery.....	1,680.34
Prunes, dried fruits, nuts, and produce, etc.....	27,494.94
Silk, silk goods, velvets, ribbons and braids, etc.....	299,845.90
Sundries.....	5,662.03
Total.....	1,655,685.58
Total for same quarter in 1893.....	842,779.73

*Cologne.*

Books, stationery, photographs, and paper ware.....	\$1,668.13
China, glass, porcelain, stone, and earthen ware.....	25,345.16
Cologne water.....	4,215.41
Dyes, drugs, chemicals, etc.....	172,238.55
Ironware, steel, cutlery, etc.....	1,217.46

Leather, hides, and skins .....	\$17,733.81
Linen, woolen, and cotton goods .....	3,413.47
Machinery .....	375.56
Mineral water .....	168,055.39
Prunes, dried fruits, nuts, land produce, etc. ....	51,994.58
Silk, silk goods, velvets, ribbons and braids, etc. ....	27,874.59
Smokers' articles, snuff, cigars, and tobacco .....	5,183.94
Soaps and perfumery .....	1,072.55
Sundries .....	17,060.24
Steel (manufactured) and Bessemer .....	20,116.02
Wine, brandy, beer, and liquors .....	89,358.96
Total .....	606,923.82
Total for same quarter in 1893 .....	359,341.33

*Crefeld.*

Books, stationery, photographs, and paper ware .....	\$19,844.42
Dyes, drugs, chemicals, etc. ....	21,086.87
Hatbands and ribbons .....	29,625.33
Linen, woolen, and cotton goods .....	8,822.84
Silk, silk goods, velvets, ribbons and braids, etc. ....	791,200.41
Soaps and perfumery .....	510.68
Sundries .....	2,946.07
Wine, brandy, beer, and liquors .....	4,226.88
Total .....	878,263.50
Total for same quarter in 1893 .....	421,037.68

*Dusseldorf.*

Books, stationery, photographs, and paper ware .....	\$3,774.94
Caps and cartridges .....	3,144.63
China, glass, porcelain, stone, and earthen ware .....	4,399.49
Dyes, drugs, chemicals, etc. ....	38,756.32
Fancy goods and toys .....	794.59
Ironware, steel, cutlery, etc. ....	5,665.40
Linen, woolen, and cotton goods .....	32,895.81
Machinery .....	55,746.14
Mineral water .....	425.95
Oil and glass paintings and chromos. ....	1,916.52
Silk, silk goods, velvets, ribbons, and braids, etc. ....	20,459.92
Sundries .....	5,557.19
Wine, brandy, beer, and liquors .....	1,359.97
Total .....	174,896.87
Total for same quarter in 1893 .....	130,613.37

*Frankfort.*

Baskets and basket ware .....	\$1,457.02
Brushes and hair pencils .....	298.21
Books, stationery, photographs, and paper ware .....	18,106.01
Buttons and button stuffs, etc. ....	469.07
Cement .....	29,448.43
Clay .....	22,345.58
China, glass, porcelain, stone, and earthen ware .....	3,856.93

Colored, photographic, and fancy paper .....	\$24,536.48
Downs and feathers .....	930.37
Dyes, drugs, chemicals, etc. ....	459,210.03
Fancy goods and toys .....	22,272.79
Gloves .....	12,245.24
Hatters' fur .....	18,159.64
Hair, prepared and raw .....	35,253.79
Hares' hair .....	28,105.63
Hops .....	19,172.74
Instruments .....	111.24
Ironware, steel, cutlery, etc. ....	7,774.27
Jewelry and precious stones .....	360.85
Leather, hides, and skins .....	130,168.89
Leather goods .....	10,427.69
Linen, woolen, and cotton goods .....	3,969.02
Machinery .....	4,995.98
Mineral water .....	18,736.19
Music, musical strings, and instruments .....	343.41
Optical goods .....	6,631.94
Oil and glass paintings and chromos. ....	436.35
Platina wire and platinum .....	37,207.43
Prunes, dried fruits, nuts, land produce, etc. ....	16,536.34
Seeds, plants, etc. ....	12,667.90
Smokers' articles, snuff, cigars, and tobacco .....	7,304.37
Soaps and perfumery .....	6,371.69
Sundries .....	18,220.78
Wine, brandy, beer, and liquors .....	23,975.49
Watches, clocks, and watchmen's detectors .....	1,444.19
Wool .....	26,726.35
Total .....	1,090,478.33
Total for same quarter in 1893 .....	657,206.69

*Freiburg.*

Books, stationery, photographs, and paper ware .....	\$18,205.00
Buttons and button stuffs, etc. ....	11,218.00
Dyes, drugs, chemicals, etc. ....	50,752.90
Fancy goods and toys .....	656.65
Instruments .....	102.05
Ironware, steel, cutlery, etc. ....	822.05
Leather, hides, and skins .....	775.20
Linen, woolen, and cotton goods .....	347,920.35
Machinery .....	349.05
Music, musical strings, and instruments .....	3,885.90
Silk, silk goods, velvets, ribbons, and braids, etc. ....	9,849.30
Sundries .....	2,204.70
Wine, brandy, beer, and liquors .....	882.20
Watches, clocks, and watchmen's detectors .....	7,877.15
Total .....	455,500.50
Total for same quarter in 1893 .....	233,551.75

*Fürth.*

Brushes and hair pencils .....	\$434.70
Bronze powder and leaf metal .....	80,751.52

Books, stationery, photographs, and paper ware.....	\$3,038.12
Dyes, drugs, chemicals, etc.....	1,389.44
Fancy goods and toys.....	29,461.99
Glass (plate, window, and mirror)....	284,788.79
Gold, silver, and metal paper.....	11,227.19
Hops.....	8,575.31
Leonic ware.....	128.89
Optical goods.....	3,081.99
Prunes, dried fruits, nuts, land produce, etc.....	6,332.94
Smokers' articles, snuff, cigars, and tobacco.....	209.87
Sundries.....	9,991.35
Total.....	439,472.01
Total for same quarter in 1893..	256,579.91

*Kehl.*

Bronze powder and leaf metal.....	\$248.11
Books, stationery, photographs, and paper ware.....	10,241.18
China, glass, porcelain, stone, and earthen ware.....	20,083.43
Dyes, drugs, chemicals, etc.....	12,633.79
Fancy goods and toys.....	1,063.33
Hair, prepared and raw.....	9,279.95
Hops.....	161.43
Ironware, steel, cutlery, etc.....	1,038.07
Leather, hides, and skins.....	46,420.86
Linen, woolen, and cotton goods.....	32,113.44
Prunes, dried fruits, nuts, land produce, etc.....	29,003.97
Silk, silk goods, velvets, ribbons and braids, etc.....	10,036.82
Smokers' articles, snuff, cigars, and tobacco.....	1,614.40
Sundries.....	603.99
Wine, brandy, beer, and liquors.....	2,258.15
Total.....	176,800.92
Total for same quarter in 1893..	144,706.17

*Mannheim.*

Books, stationery, photographs, and paper ware.....	\$3,038.42
Cement.....	14,514.43
Dyes, drugs, chemicals, etc.....	582,770.04
Glass (plate, window, and mirror)....	555.86
Hops.....	18,611.00
Ironware, steel, cutlery, etc.....	554.33
Leather, hides, and skins.....	235,594.86
Linen, woolen, and cotton goods.....	13,319.47
Sundries.....	18,878.19
Wine, brandy, beer, and liquors.....	71,439.43
Total.....	959,276.03
Total for same quarter in 1893..	689,607.93

*Mayence.*

Cement.....	\$49,709.22
Dyes, drugs, chemicals, etc.....	118,598.28
Hops.....	71,106.72
Jewelry and precious stones.....	85,355.07
Leather, hides, and skins.....	19,449.82

Music, musical strings, and instruments.....	\$1,176.44
Prunes, dried fruits, nuts, land produce, etc.....	12,355.67
Sundries.....	6,218.32
Steel (manufactured) and Bessemer...	1,246.51
Wine, brandy, beer, and liquors.....	209,720.67
Total.....	574,936.72
Total for same quarter in 1893..	472,393.19

*Munich.*

Brushes and hair pencils.....	\$1,518.54
Bronze powder and leaf metal.....	1,916.15
Books, stationery, photographs, and paper ware.....	14,007.51
China, glass, porcelain, stone, and earthen ware.....	2,190.78
Dyes, drugs, chemicals, etc.....	2,935.37
Fancy goods and toys.....	8,285.80
Gold, silver, and metal paper.....	7,101.83
Gloves.....	35,956.91
Instruments.....	1,898.05
Leather, hides, and skins.....	1,588.30
Linen, woolen, and cotton goods.....	3,628.05
Music, musical strings, and instruments.....	1,030.76
Oil and glass paintings and chromos..	43,990.92
Prunes, dried fruits, nuts, land produce, etc.....	8,470.74
Statuary and sculpture.....	5,689.84
Sundries.....	8,967.65
Wine, brandy, beer, and liquors.....	22,417.95
Watches, clocks, and watchmen's detectors.....	2,840.49
Total.....	174,435.64
Total for same quarter in 1893..	121,930.24

*Nuremberg.*

Brushes and hair pencils.....	\$3,164.95
Bronze powder and leaf metal.....	80,836.09
Books, stationery, photographs, and paper ware.....	15,900.69
Carbons, electric.....	26,018.11
Caps and cartridges.....	1,464.45
Clay.....	385.19
China, glass, porcelain, stone, and earthen ware.....	6,727.73
Decalcomania.....	12,759.14
Dyes, drugs, chemicals, etc.....	21,242.81
Fancy goods and toys.....	10,022.41
Gold, silver, and metal paper.....	675.30
Gas-burners, lava gas tips, and brass lamps.....	5,594.51
Hair, prepared and raw.....	3,377.05
Hops.....	177,666.58
Instruments.....	6,222.93
Ironware, steel, cutlery, etc.....	5,133.56
Leather, hides, and skins.....	1,092.39
Leonic ware.....	9,844.49
Linen, woolen, and cotton goods.....	1,174.28
Lithographic stones and materials....	22,634.38
Music, musical strings, and instruments.....	10,570.80

Optical goods.....	\$2,789.78
Oil and glass paintings and chromos..	1,383.51
Slates, slate pencils, and lead pencils..	38,777.94
Smokers' articles, snuff, cigars, and tobacco.....	740.79
Sundries.....	5,105.37
Wine, brandy, beer, and liquors.....	7,338.80
Total.....	478,644.03
Total for same quarter in 1893..	309,937.65

*Sonneberg.*

Baskets and basket ware.....	\$1,294.95
Books, stationery, photographs, and paper ware.....	2,829.67
China, glass, porcelain, stone and earthen ware.....	110,672.61
Dyes, drugs, chemicals, etc.....	4,341.27
Fancy goods and toys.....	111,349.14
Gloves.....	1,391.61
Ironware, steel, cutlery, etc.....	1,800.93
Linen, woolen, and cotton goods.....	1,418.86
Oil and glass paintings and chromos..	1,209.05
Slates, slate pencils, and lead pencils..	12,853.08
Sundries.....	2,957.82
Wine, brandy, beer, and liquors.....	6,100.86
Total.....	258,210.75
Total for same quarter in 1893..	218,186.99

*Stuttgart.*

Books, stationery, photographs, and paper ware.....	\$13,348.60
Corsets.....	33,964.04
Dyes, drugs, chemicals, etc.....	33,693.25
Instruments.....	7,608.90
Ironware, steel, cutlery, etc.....	524.00
Jewelry and precious stones.....	3,527.00
Leather, hides, and skins.....	1,580.30
Linen, woolen, and cotton goods.....	80,941.54
Music, musical strings, and instruments.....	42,782.98
Prunes, dried fruits, nuts, land produce, etc.....	60,470.00
Sundries.....	29,218.58
Wine, brandy, beer, and liquors.....	234.75
Watches, clocks, and watchmen's detectors.....	1,224.37
Total.....	309,208.31
Total for same quarter in 1893..	183,373.77

*Weimar.*

Books, stationery, photographs, and paper ware.....	\$535.44
China, glass, porcelain, stone, and earthen ware.....	26,317.75
Dyes, drugs, chemicals, etc.....	4,642.28
Fancy goods and toys.....	36,678.96
Gloves.....	7,421.12
Hair, prepared and raw.....	1,491.37
Linen, woolen, and cotton goods.....	4,820.37
Optical goods.....	5,358.26
Seeds, plants, etc.....	39,332.47

Smokers' articles, snuff, cigars, and tobacco.....	\$1,861.37
Sundries.....	3,988.35
Wine, brandy, beer, and liquors.....	949.97
Watches, clocks, and watchmen's detectors.....	2,292.80
Total.....	135,690.51
Total for same quarter in 1893..	108,656.30

*Total from Frankfort and consulates thereunder.*

Braids, bindings, trimmings, etc.....	\$248,650.64
Baskets and basket ware.....	47,298.77
Brushes and hair pencils.....	5,416.40
Bronze powder and leaf metal.....	163,751.87
Books, stationery, photographs, and paper ware.....	204,143.73
Buttons and button stuffs, etc.....	45,651.82
Carbons, electric.....	26,700.65
Caps and cartridges.....	4,609.08
Cement.....	93,672.08
Clay.....	22,730.77
China, glass, porcelain, stone, and earthen ware.....	219,892.89
Corsets.....	33,964.04
Cologne water.....	4,215.41
Colored, photographic, and fancy paper.....	24,536.48
Decalcomania.....	12,759.14
Downs and feathers.....	930.37
Dyes, drugs, chemicals, etc.....	1,828,974.20
Fancy goods and toys.....	242,086.06
Glass (plate, window, and mirror).....	285,344.65
Gold, silver, and metal paper.....	19,004.23
Gas-burners, lava gas tips, and brass lamps.....	5,594.51
Gloves.....	57,014.88
Hatters' fur.....	18,159.64
Hatbands and ribbons.....	297,988.82
Hair, prepared and raw.....	49,402.16
Hares' hair.....	28,105.63
Hops.....	359,840.49
Instruments.....	15,943.17
Ironware, steel, cutlery, etc.....	360,224.88
Jewelry and precious stones.....	89,242.92
Leather, hides, and skins.....	454,404.43
Leather goods.....	10,427.69
Leonic ware.....	9,973.38
Linen, woolen, and cotton goods.....	826,263.30
Lithographic stones and materials.....	22,634.38
Machinery.....	63,147.07
Mineral water.....	190,769.68
Music, musical strings, and instruments.....	59,790.29
Optical goods.....	17,861.97
Oil and glass paintings and chromos..	50,439.98
Platina wire and platinum.....	37,207.43
Prunes, dried fruits, nuts, land produce, etc.....	212,659.18
Pins and needles, hooks and eyes.....	62,434.39
Seeds, plants, etc.....	52,000.37
Slates, slate pencils, and lead pencils.....	51,631.02

Silk, silk goods, velvets, ribbons and braids, etc.....	\$1, 159,266.94
Smokers' articles, snuff, cigars, and tobacco.....	16,914.74
Soaps and perfumery.....	7,954.92
Statuary and sculpture.....	5,689.84
Sundries.....	138,688.38
Steel (manufactured) and Bessemer..	21,362.53
Wine, brandy, beer, and liquors.....	444,292.52
Watches, clocks, and watchmen's de- tectores.....	15,679.00
Wool.....	26,726.35
Total.....	8,774,070.16
Total for same quarter in 1893..	5,520,985.82
Increase.....	3,253,084.35
Total exports, calendar year 1891.....	\$37,386,587.43
Total exports, calendar year 1892.....	38,902,166.07
Total exports, calendar year 1893.....	34,358,041.83
Total exports, calendar year 1894.....	27,646,878.54

## GREECE.

[Report by Consul-General Alexander.]

*Athens.*

Rags (woolen).....	\$359.03
Samples (sundries).....	17.49
Total.....	376.52

*Patras.*

Currants.....	\$113,342.00
Olives.....	5,542.70
Onions and garlic.....	81.45
Sultanas.....	2,677.54
Wine.....	679.01
Total.....	122,322.70
Total for same quarter in 1893..	309,577.65
Decrease.....	*187,254.95

*Piræus.*

Bricks (fire, magnesian).....	\$2,446.45
Cement.....	185.20
Cognac.....	2,659.27
Fish, dried.....	27.00
Honey.....	30.00
Magnesite, calcined.....	122.95
Olive oil.....	431.70
Olives.....	75.00
Sponges.....	6,209.60
Tobacco (samples in leaf).....	4.75
Total.....	12,191.92
Total for same quarter in 1893..	1,179.60
Increase.....	11,012.32

*Syra.*

Sponges.....	\$157.90
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*Zante.*

Wine.....	\$223.67
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*Total from Greece.*

Bricks (fire, magnesian).....	\$2,446.45
Cement.....	185.20
Cognac.....	2,659.27
Currants.....	113,342.00
Fish, dried.....	27.00
Honey.....	30.00
Magnesite, calcined.....	122.95
Olive oil.....	431.70
Olives.....	5,617.70
Onions and garlic.....	81.45
Rugs (woolen).....	359.03
Samples (sundries).....	17.49
Sponges.....	6,367.50
Sultanas.....	2,677.54
Tobacco (samples in leaf).....	4.75
Wine.....	902.68
Total.....	135,272.71
Total for same quarter in 1893..	310,757.25
Decrease.....	175,484.54

## HONDURAS.

[Report by Consul Little.]

*Amapala.*

Amalgam of silver.....	\$2,356.55
Coffee.....	313.39
Deerskins.....	1,145.20
Gold:	
Bullion.....	13,403.07
Crude.....	1,800.00
Hides.....	428.85
India rubber.....	123.30
Silver bullion.....	115,088.02
Total.....	134,658.38

*Ceiba.*

Bananas.....	\$31,113.29
Cocoanuts.....	3,025.90
Limes.....	20.25
Total.....	34,159.44

*Puerto Cortes.*

Bananas.....	\$81,500.00
Coffee.....	16,590.00
Deerskins.....	4,800.00
Hides.....	95.00
India rubber.....	3,850.00
Sarsaparilla.....	11,250.00
Total.....	118,085.00

*Truxillo.*

Bananas.....	\$1,431.00
Coffee.....	606.40

\* Because of duty on currants imposed by the new tariff law.



Cocoanuts.....	\$4,150.22
Deerskins.....	4,614.02
Hides.....	1,262.50
Hide cuttings.....	29.96
India rubber.....	2,109.12
Sarsaparilla.....	9,097.42
Tiger skins.....	59.00
Total.....	23,359.64

*Total from Honduras.*

Amalgam of silver.....	\$2,356.55
Bananas.....	114,044.29
Coffee.....	17,509.79
Cocoanuts.....	7,176.12
Deerskins.....	10,559.22
Gold:	
Bullion.....	13,403.07
Crude.....	1,800.00
Hides.....	1,786.35
Hide cuttings.....	29.96
India rubber.....	6,082.42
Limes.....	20.25
Sarsaparilla.....	20,347.42
Silver bullion.....	115,088.02
Tiger skins.....	59.00
Total.....	310,262.46

## ITALY.

[Report by Consul-General Jones.]

*Castellamare di Stabia.*

Beans.....	\$2,616.34
Cheese.....	34,946.05
Chestnuts.....	3,458.20
Chick-pease.....	2,283.65
Filberts.....	2,669.34
Fish (salted).....	68.36
Fruits (dry).....	2,207.33
Garlic.....	5,240.37
Lemons (fresh).....	30,939.63
Macaroni.....	97,740.09
Miscellaneous.....	9,857.12
Olive oil.....	6,865.18
Oranges.....	3,098.04
Semoule.....	470.46
Tomato paste.....	530.88
Walnuts.....	71,809.32
Wine.....	1,036.77
Wood, manufactures.....	86.12
Total.....	275,923.25
Total for same quarter in 1893..	252,560.74
Increase.....	23,362.51

*Catania.*

Almonds.....	\$19,995.87
Asphaltum.....	1,075.29
Beans.....	58.69
Brimstone.....	38,127.60
Canary seed.....	732.51
Cheese.....	58.35
Chestnuts.....	349.60

Chick-pease.....	\$15.62
Filberts.....	1,918.57
Lemons (fresh).....	46,542.16
Licorice.....	498.41
Olives.....	67.33
Oranges.....	369.67
Sulphur flowers.....	5,797.69
Tomato paste.....	707.73
Vinegar.....	16.16
Wine lees.....	1,651.38

Total.....117,982.63

Total for same quarter in 1893..114,081.49

Increase.....3,901.14

*Florence.*

Alabaster (wrought).....	\$7,548.30
Antiquities.....	6,647.46
Baskets.....	635.10
Books.....	1,686.28
Bronzes (statuary).....	1,513.91
Earthenware.....	1,764.20
Furniture (antique).....	2,595.37
Hemp (tow).....	51,411.65
Household goods.....	3,573.60
Ironware.....	567.60
Jewelry.....	1,557.93
Marble (statuary).....	18,726.40
Mosaics.....	642.25
Olive oil.....	522.50
Orris root.....	1,313.20
Paintings.....	16,017.60
Porcelain.....	737.70
Seeds.....	761.69
Silverware.....	1,064.50
Skins.....	6,430.90
Soap.....	654.20
Straw:	
Braids.....	153,560.46
Hats.....	274,499.84
Unclassified.....	17,809.12
Terra cotta.....	3,989.70
Wine.....	6,803.60

Total.....583,035.46

Total for same quarter in 1893..301,525.58

Increase.....281,509.88

*Genoa.*

Alabaster (wrought).....	\$193.57
Anchovies.....	4,333.65
Artichokes.....	39.57
Beans.....	253.64
Beeswax.....	1,040.80
Buttons.....	128.96
Castor oil.....	1,245.25
Cheese.....	42,846.45
Chestnuts.....	15,146.80
Chick-pease.....	997.70
Citron (in brine).....	289.28
Cotton waste.....	37,198.93
Earthenware.....	177.50
Fiber.....	1,509.35
Figs.....	905.30
Fulgree.....	3,725.25

Fish (in oil).....	\$1,567.85
Fruits :	
Candied.....	1,256.18
Dry.....	1,113.46
Furniture (antique).....	373.62
Gloves.....	1,016.79
Glycerin.....	13,008.92
Gum arabic.....	250.25
Hair, cattle.....	401.95
Herbs.....	1,264.92
Hides (see, also, skins).....	11,069.02
Household goods.....	204.86
Insect flower.....	2,239.40
Lace.....	173.75
Liquors.....	2,109.60
Macaroni.....	10,857.39
Marble, wrought.....	714.09
Medicines.....	640.12
Miscellaneous.....	348.62
Mushrooms.....	1,775.42
Olive oil.....	34,391.08
Pipes.....	61.70
Rice.....	12,338.36
Saffron.....	73.36
Sausages.....	295.98
Semoule.....	420.46
Silk (raw).....	34,468.42
Skins.....	1,386.95
Soap.....	938.25
Sweets.....	606.23
Talc.....	1,154.94
Tomato paste.....	268.65
Towels.....	707.35
Velvets.....	395.15
Wine.....	10,808.39
Wood, natural.....	290.85
Whetstones.....	125.02
Zinc.....	9,836.05

Total.....268,985.40  
Total for same quarter in 1893..331,013.58

Decrease.....62,028.18

### Leghorn.

Alabaster (unwrought).....	\$1,594.71
Almonds.....	1,580.86
Argols.....	62,098.23
Beans.....	7.78
Beeswax.....	3,734.69
Boracic acid.....	1,050.87
Brier wood.....	3,208.27
Cheese.....	7,038.27
Citron (candied).....	12,663.13
Earth :	
Sienna.....	473.24
Umber.....	1,939.51
Glassware.....	2,501.11
Hemp (unclassified).....	27,245.18
Juniper berries.....	2,796.57
Liquors.....	23.82
Macaroni.....	317.82
Marble :	
Blocks.....	138,971.46
Chippings.....	927.96
Slabs.....	22,001.23

Marble—Continued.	
Statuary.....	\$21,837.84
Tiles.....	781.26
Wrought.....	3,045.35
Miscellaneous.....	345.28
Olive nuts (ground).....	938.96
Olive oil.....	80,275.20
Orris root.....	22,674.62
Paintings.....	67.80
Peanuts.....	1,822.39
Pumice stone.....	7,332.90
Rags.....	27,441.70
Rice.....	455.48
Soap.....	46,653.39
Soap stock.....	7,556.57
Talc.....	42.46
Wine.....	2,301.11
Total.....	516,807.02
Total for same quarter in 1893..	328,329.82
Increase.....	188,477.20

### Messina.

Anchovies.....	\$6,614.79
Argols.....	93,940.85
Beans.....	293.54
Cheese.....	179.09
Citron (in brine).....	3,275.54
Essences.....	64,418.85
Figs.....	261.66
Filberts.....	35,367.75
Fish (salted).....	340.54
Furniture (antique).....	10.13
Lemons :	
Fresh.....	668,879.86
Juice.....	379.06
Lentils.....	3.86
Locust beans.....	170.27
Macaroni.....	218.09
Machinery.....	386.00
Miscellaneous.....	2,063.14
Nuts (unclassified).....	215.54
Olives.....	157.58
Olive oil.....	6,875.01
Oranges.....	22,034.98
Pistachio nuts.....	791.62
Pumice stone.....	2,133.07
Rice.....	9.65
Silk, unclassified.....	15,698.12
Skins.....	3,916.36
Squills.....	130.27
Sulphur oil.....	2,473.16
Tomatoes.....	64.26
Tomato paste.....	23.91
Wine.....	309.28
Wine lees.....	1,730.24
Total.....	933,366.07
Total for same quarter in 1893..	771,260.73
Increase.....	162,105.34

### Milan.

Books.....	\$2,413.34
Buttons.....	2,176.73
Cheese.....	14,073.22

Dyestuffs.....	\$3,611.14
Fruits, fresh.....	85.40
Furniture (antique).....	6,119.74
Gloves.....	36,645.27
Hair, horse.....	7,887.79
Hatbands.....	5,917.63
Hemp (yarns).....	4,221.34
Household goods.....	723.75
Marble, statuary.....	2,272.58
Medicines.....	1,843.72
Mineral water.....	51.95
Olive oil.....	1,165.20
Paints.....	338.81
Rice.....	593.48
Seeds.....	540.40
Silk:	
Cocoons.....	44.47
Manufactures.....	75,988.79
Raw.....	1,024,503.70
Waste.....	42,352.43
Soap.....	1,039.21
Sumac.....	1,255.17
Wine.....	4,325.22
Total.....	1,240,190.48
Total for same quarter in 1893..	627,750.76
Increase.....	612,439.72

*Naples.*

Almonds.....	\$16,188.42
Argols.....	131,497.39
Books.....	338.81
Bronzes (statuary).....	482.05
Bulbs.....	553.53
Cheese.....	14,680.41
Cherries.....	3,610.21
Chestnuts.....	2,322.88
Chick-pease.....	807.30
Figs.....	660.98
Filberts.....	1,883.95
Garlic.....	878.30
Gloves.....	23,831.59
Hair, human.....	3,334.19
Hides (see, also, skins).....	3,730.86
Household goods.....	65.20
Licorice.....	4,778.40
Lupines.....	137.00
Macaroni.....	2,779.58
Marble, statuary.....	134.14
Melons.....	80.80
Miscellaneous.....	39,493.93
Musical instruments.....	114.50
Musical strings.....	384.15
Olive oil.....	6,281.92
Onions.....	136.13
Paintings.....	423.70
Pease.....	848.40
Preserves.....	683.96
Seeds.....	7,117.10
Silk, manufactures.....	154.40
Skins.....	34,669.98
Snuff.....	317.88
Soap.....	3,011.80
Soap stock.....	1,202.90
Sulphur oil.....	15,269.55

St. John's bread.....	\$1,622.45
Tartar.....	1,759.29
Walnuts.....	19,755.85
Wine.....	3,484.67
Wool, natural.....	1,446.73
Total.....	350,955.28
Total for same quarter in 1893..	256,650.16
Increase.....	94,305.12

*Palermo.*

Almonds.....	\$39,178.51
Anchovies.....	213.66
Argols.....	13,814.87
Artichokes.....	588.27
Beans.....	160.80
Brimstone.....	323,372.70
Cheese.....	4,397.33
Cherries.....	14.40
Chestnuts.....	21.45
Citrate of lime.....	8,199.77
Cosmetics.....	520.00
Fish:	
In oil.....	36.00
Salted.....	417.35
Garlic.....	490.30
Groceries.....	57.40
Lemons:	
Fresh.....	157,600.14
Juice.....	237.19
Oil.....	513.00
Linen.....	27.00
Macaroni.....	5,428.77
Machinery.....	107.80
Manna.....	7,249.46
Marble, slabs.....	22.40
Miscellaneous.....	616.88
Mosaics.....	720.00
Olives.....	841.96
Olive oil.....	2,236.10
Oranges.....	57,570.30
Orange oil.....	440.00
Pease.....	86.40
Pipes.....	16.43
Salt.....	5,940.70
Seeds.....	14.80
Soap stock.....	7,016.36
Sponges.....	192.51
Sumac.....	109,473.78
Tomatoes.....	57.20
Tomato paste.....	1,179.00
Vinegar.....	6.39
Walnuts.....	17.10
Wine.....	5,175.37
Wool:	
Natural.....	5.00
Manufactures.....	6.00
Total.....	754,280.85
Total for same quarter in 1893..	415,302.68
Increase.....	338,978.17

*Rome.*

Bronzes (statuary).....	\$248.00
Cheese.....	22,276.45

Earth (sienna).....	\$611.05
Furniture (antique).....	248.58
Liquors.....	233.84
Marble statuary.....	9,747.76
Mosaics.....	96.89
Paintings.....	4,498.83
Pictures.....	525.44
Plaster casts.....	187.21
Pottery.....	31.94
Silverware.....	295.16
Silk:	
Manufactures.....	40.44
Raw.....	11,165.90
Terra cotta.....	283.65
Total.....	50,992.14
Total for same quarter in 1893..	26,639.61
Increase.....	24,351.53

*Turin.*

Cheese.....	\$1,099.47
Chestnuts.....	5,905.93
Gun stocks.....	283.71
Hair:	
Cloth.....	935.60
Human.....	980.11
Hemp (yarns).....	227.78
Paints.....	25.67
Sausages.....	83.61
Silk:	
Manufactures.....	1,876.01
Raw.....	49,577.78
Talc.....	568.10
Vermouth.....	55,031.09
Wine.....	121.69
Wool, manufactures.....	9,684.25
Total.....	126,330.80
Total for same quarter in 1893..	81,494.92
Increase.....	44,835.88

*Venice.*

Antiquities.....	\$2,608.00
Books.....	824.10
Earthenware.....	609.95
Furniture (antique).....	6,041.16
Glassware.....	5,265.72
Hemp (tow).....	74,905.01
Lace.....	1,912.95
Linen.....	496.84
Majolica.....	202.50
Marble, statuary.....	600.00
Matches.....	267.30
Miscellaneous.....	471.32
Orris root.....	2,015.20
Paintings.....	3,947.18
Shellwork.....	457.52
Straw, braids.....	15,594.40
Wine.....	192.72
Total.....	116,411.87
Total for same quarter in 1893..	42,312.16
Increase.....	74,099.71

*Total from Italy.*

Alabaster:	
Wrought.....	\$7,742.07
Unwrought.....	1,594.71
Almonds.....	76,943.66
Anchovies.....	11,162.10
Antiquities.....	9,255.46
Argols.....	301,351.34
Artichokes.....	927.84
Asphaltum.....	1,075.29
Baskets.....	635.10
Beans.....	3,390.79
Beeswax.....	4,775.49
Books.....	5,262.53
Boric acid.....	1,050.87
Brier wood.....	3,208.27
Brimstone.....	361,500.30
Bronzes (statuary).....	2,243.96
Buttons.....	2,305.69
Bulbs.....	553.53
Castor oil.....	1,245.25
Canary seed.....	732.51
Cheese.....	141,585.09
Cherries.....	3,624.61
Chestnuts.....	27,204.86
Citrate of lime.....	8,199.77
Chick-pease.....	4,104.27
Citron:	
Candied.....	12,663.13
In brine.....	3,564.82
Cosmetics.....	520.00
Cotton waste.....	37,198.93
Dyestuffs.....	3,611.14
Earthenware.....	2,551.65
Earth:	
Sienna.....	1,084.29
Umber.....	1,939.51
Essences.....	64,418.85
Fiber.....	1,509.35
Figs.....	1,827.94
Filberts.....	41,839.61
Filigree.....	3,725.25
Fish:	
In oil.....	1,603.85
Salted.....	826.25
Fruits:	
Fresh.....	85.40
Candied.....	1,256.18
Dry.....	3,320.79
Furniture (antique).....	15,388.60
Garlic.....	6,608.97
Glassware.....	7,766.83
Gloves.....	61,493.65
Glycerin.....	13,008.92
Groceries.....	57.40
Gum arabic.....	250.25
Gun stocks.....	283.71
Hair:	
Cattle.....	401.95
Cloth.....	935.60
Horse.....	7,887.79
Human.....	4,314.30
Hatbands.....	5,917.63
Hemp:	
Tow.....	126,316.66

## Hemp—Continued.

Yarns.....	\$4,449.12
Unclassified.....	27,245.18
Herbs.....	1,264.92
Hides (see, also, skins).....	14,799.88
Household goods.....	4,567.41
Ironware.....	567.60
Insect flower.....	2,239.40
Jewelry.....	1,557.93
Juniper berries.....	2,796.57
Lace.....	2,086.70
Lemons:	
Fresh.....	903,961.79
Juice.....	616.25
Oil.....	523.00
Lentils.....	3.86
Licorice.....	5,276.81
Linen.....	523.84
Liquors.....	2,367.26
Locust beans.....	170.27
Lupines.....	137.00
Macaroni.....	117,341.74
Machinery.....	493.80
Majolica.....	202.50
Manna.....	7,249.46
Marble:	
Blocks.....	138,971.46
Chippings.....	927.96
Slabs.....	22,023.63
Statuary.....	56,318.72
Tiles.....	781.26
Wrought.....	3,759.44
Matches.....	267.30
Melons.....	80.80
Medicines.....	2,483.84
Miscellaneous.....	53,196.29
Mosaics.....	1,459.14
Mushrooms.....	1,775.42
Musical instruments.....	114.50
Musical strings.....	384.15
Mineral water.....	51.95
Nuts (unclassified).....	215.54
Olive nuts (ground).....	938.96
Olives.....	1,066.87
Olive oil.....	138,612.19
Oranges.....	83,072.99
Onions.....	136.13
Orris root.....	26,003.02
Orange oil.....	440.00
Paintings.....	24,955.11
Paints.....	364.48
Peanuts.....	1,822.39
Pease.....	934.80
Pictures.....	525.44
Pipes.....	78.13
Pistachio nuts.....	791.62
Plaster casts.....	187.21
Porcelain.....	737.70
Pottery.....	31.94
Preserves.....	683.96
Pumice stone.....	9,465.97
Rags.....	27,441.70
Rice.....	13,396.97
Saffron.....	73.36
Salt.....	5,940.70
Sausages.....	379.59

Seeds.....	\$8,434.1
Semoule.....	890.92
Shellwork.....	457.52
Silverware.....	1,859.66
Silk:	
Cocoons.....	44.47
Manufactures.....	78,059.64
Raw.....	1,119,715.80
Waste.....	42,352.42
Unclassified.....	15,698.12
Skins.....	46,404.19
Snuff.....	317.88
Soap.....	52,296.85
Soap stock.....	15,775.83
Squills.....	130.27
Sponges.....	192.51
Straw:	
Braids.....	169,154.86
Hats.....	274,499.84
Unclassified.....	17,809.12
Sulphur:	
Flowers.....	5,797.69
Oil.....	17,742.71
Sumac.....	110,728.95
St. John's bread.....	1,622.45
Sweets.....	606.23
Talc.....	1,765.50
Tartar.....	1,759.20
Terra cotta.....	4,273.35
Tomatoes.....	121.46
Tomato paste.....	2,710.17
Towels.....	707.35
Velvets.....	395.23
Vermouth.....	55,031.09
Vinegar.....	22.55
Walnuts.....	91,582.27
Wine.....	34,558.82
Wine lees.....	3,381.62
Wood:	
Natural.....	290.85
Manufactures.....	86.12
Wool:	
Natural.....	1,451.73
Manufactures.....	9,690.25
Whetstones.....	125.02
Zinc.....	9,836.05
Total.....	5,335,260.25
Total for same quarter in 1893.....	3,548,922.23
Increase.....	1,786,338.02

## MEXICO.

## MEXICO CITY.

[Report by Consul-General Crittenden.]

Bullion:	
Gold and silver.....	\$134,094.10
Silver.....	149,444.75
Brown root, or broom root.....	2,383.95
Beans (black).....	235.80
Curiosities (Mexican).....	54.50
Cane (sugar).....	20.00
Chicle.....	143,458.45
Cedar.....	11,164.00

Damiana.....	\$2,209.51
Fruits (candied).....	253.68
Flour (wheat).....	22.00
Fins (shark).....	94.04
Fustic.....	4,282.62
Gold (old).....	700.00
Hair.....	31.10
Hennuquen.....	2,519,918.23
Hides.....	13,181.64
Hemp (fiber).....	30,028.92
Honey.....	2,178.21
Jewelry (Mexican).....	124.40
Logwood.....	6,133.12
Meats (dry).....	34.00
Ore:	
Gold and silver.....	247,239.40
Silver.....	93,113.98
Oranges.....	6,464.42
Oregano.....	43.52
Orchilla.....	1,196.66
Paintings.....	500.00
Pearls.....	1,207.50
Plumes.....	138.75
Rubber.....	2,985.07
Stamps (cancelled postage).....	200.00
Skins (deer).....	10,998.71
Shells:	
Pearl.....	4,917.26
Tortoise.....	928.53
Skins:	
Goat.....	7,093.55
Hog.....	111.24
Alligator.....	2,308.17
Sarsaparilla.....	3,001.18
Tobacco (leaf).....	240.50
Tan bark.....	2,501.97
Vanilla.....	613.47
Wood (mahogany and cedar).....	84,048.58
Total.....	3,487,699.68

CONSULATE-GENERAL OF NUEVO LAREDO  
AND CONSULATES THEREUNDER.

[Report by Consul-General Donnelly.]

*Chihuahua.*

Beans.....	\$212.10
Bullion:	
Gold.....	190,514.92
Silver.....	175,044.51
Silver and lead mixed.....	61,224.19
Hides.....	5,612.46
Oranges.....	42,583.45
Silver:	
Ores.....	96,586.22
Sulphides.....	8,348.68
Tobacco.....	119.52
White lead.....	7.48
Total.....	580,253.53

*Durango.*

Base bullion.....	\$137,217.93
Base.....	246.44

Cotton-seed oil cake.....	\$144.90
Hides.....	18,784.30
Silver ores.....	1,055.56
Total.....	157,449.13

*Ensenada.*

Bullion, gold.....	\$26,004.51
Concentrates.....	981.40
Leather and skins.....	1,695.71
Oranges.....	44.04
Wax (bees').....	301.78
Total.....	29,027.44

*Guaymas.*

Bullion, gold and silver.....	\$165,491.00
Concentrates (117,000 pounds).....	8,230.00
Cyanides (755 pounds).....	4,690.00
Fish, dried.....	330.00
Chick-pease (30 sacks).....	150.00
Graphite ores (496,900 pounds).....	2,895.00
Gold ore (716 pounds).....	5,421.00
Hides.....	1,206.00
Leather (233 rolls).....	4,231.00
Mescal (30 barrels).....	600.00
Oranges.....	14,077.00
Silver ores (7,526,930 pounds).....	405,978.00
Silver sulphides (7,286 pounds).....	34,407.00
Total.....	647,606.00

*Matamoros.*

American products returned.....	\$75.84
Animals, live.....	23,146.50
Asphaltum.....	36.50
Beans.....	37.88
Bones and horns.....	3,211.71
Bullion (Mexican silver dollars).....	11,100.00
Cotton seed.....	52.96
Feathers.....	46.28
Hats, woolen.....	109.21
Hair, horse and cow.....	3,998.39
Hides.....	10,970.76
Leather, sole.....	13.00
Nuts, unshelled.....	12.50
Skins.....	16,557.14
Sugar, crude.....	230.47
Wax (bees').....	725.70
Wool.....	25.60
Total.....	70,350.44

*Nogales.*

Bullion:	
Gold (5 bars).....	\$61,764.00
Silver (27 bars).....	24,911.00
Lead (4,200 pounds).....	688.00
Burros (16 head).....	81.00
Cattle (6,230 head).....	25,976.00
Copper in bars (102,846 pounds).....	5,041.00
Hogs (51 head).....	135.00
Mescal (18 gallons).....	60.00
Ores:	
Gold (47,835 pounds).....	12,647.00
Silver (1,367,980 pounds).....	109,172.00
Sheep (96 head).....	97.00

Wheat (10,085 pounds).....	\$165.00
Wool (2,400 pounds).....	242.00
Total.....	240,979.00

*Nuevo Laredo.*

American products returned.....	\$20,217.42
Animals, live:	
Steers.....	\$17,192.00
Cows.....	5,660.00
Heifers.....	480.00
Horses.....	85.00
Mares.....	903.00
Colts.....	18.00
Mules.....	389.00
Jennets.....	145.00
	24,872.00

Argentiferous lead.....	2,247,223.69
Beans.....	1,170.30
Bones and horns.....	314.87
Bricks (clay).....	98.60
Coffee.....	9,991.00
Copper matte.....	37,246.55
Copper ores.....	4,580.00
Cutlery.....	241.54
Earthenware.....	361.87
Hair, horse and cow.....	5,439.24
Hides and skins:	
Hides.....	\$20,238.21
Goatskins.....	107,519.22
Deerskins.....	2,846.24
Sheepskins.....	269.42
Wild-hog skins.....	989.34
Wild-cat skins.....	183.70
	132,046.13

Ixtle (fiber).....	6,186.07
Leather.....	293.12
Mineral water.....	110.00
Morrales (ixtle bags).....	120.00
Opals.....	213.30
Oranges.....	2,182.25
Parrots.....	478.43
Pepper.....	1,264.31
Sarsaparilla.....	623.44
Sugar, crude.....	1,633.13
Wax (bees').....	27.86
Woolens.....	2,283.10

Total..... 2,489,218.22

Total for same quarter in 1893.. 1,959,977.68

Increase.....	529,240.54
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*Paso del Norte.*

American products returned.....	\$1,845.00
Animals, live:	
Beans.....	90,940.00
Books.....	739.00
Bullion:	
Gold.....	92.00
Silver.....	1,309.00
Old gold.....	94,951.00
Cotton goods.....	2,020.00
Eggs.....	68.00
Leather.....	48.00
Hides.....	118.00
	1,138.00

Jewelry.....	\$205.00
Manuscript.....	761.00
Opals.....	115.00
Opium.....	730.00
Ores.....	52,062.00
Hats, palm leaf.....	377.00
Pictures.....	89.00
Plants.....	100.00
Pepper, red.....	305.00
Statuettes.....	72.00
Strawberries.....	13.00
Sugar, crude.....	58.00
Tobacco.....	147.00
Used postage stamps.....	25.00
Wine.....	400.00

Total..... 248,727.00

*Piedras Negras.*

American products returned.....	\$9,186.75
Animals, live.....	109,131.00
Beans.....	310.00
Brans.....	85.00
Bullion, silver.....	7,975.23
Coal.....	26,981.68
Hides.....	470.65
Skins.....	16,195.16
Ores:	
Silver.....	2,573.50
Silver lead.....	64,967.50
Parrots.....	232.10

Total..... 238,108.57

*Saltillo.*

Beans.....	\$1,124.23
Bullion:	
Silver.....	4,305.00
Copper and matte.....	79,759.86
Cotton-seed meal.....	1,537.00
Hair, horse.....	2,858.93
Hides.....	4,347.17
Ixtle (fiber).....	14,208.38
Ores:	
Silver.....	11,846.85
Antimony.....	1,236.28
Skins, goat.....	93,296.26

Total..... 214,513.96

*San Luis Potosi.*

Anise seed.....	\$78.84
Bullion:	
Gold.....	79,991.56
Silver.....	680,159.27
Lead.....	52,298.33
Ixtle (fiber).....	1,000.00
Metates (grinding stones).....	22.58
Music.....	404.35
Ores.....	115,722.90
Pepper.....	9,360.54
Pottery.....	164.50
Skins (goat).....	21,895.00
Sweetmeats (tuna cheese).....	18.20

Total..... 961,116.07

*Tampico.*

American products returned.....	\$55,956.00
Bullion:	
Silver.....	26,603.00
Lead.....	8,144.00
Cedar hewn.....	2,484.00
Coffee.....	655.00
Copper, scrap.....	207.00
Chicle (chewing gum).....	2,385.00
Fustic (dyewood).....	5,459.00
Hair (horse and cow).....	1,347.00
Hides.....	34,520.00
Honey.....	13,849.00
Ixtle (fiber).....	22,747.00
Jalap.....	15.00
Parrots.....	112.00
Sarsaparilla.....	16,673.00
Skins:	
Wild hog.....	429.00
Deer.....	2,061.00
Goat.....	50,033.00
Vanilla.....	4,530.00
Wool.....	112.00
Total.....	248,321.00

*Tuxpan.*

Beans.....	\$235.80
Chicle (chewing gum).....	41,555.50
Fustic (dyewood).....	2,297.20
Fruits, oranges, etc.....	177.92
Hides.....	2,067.66
Honey.....	2,178.21
Instrument of agriculture (sample).....	2.00
Mahogany and cedar woods.....	15,762.18
Rubber.....	2,560.67
Sarsaparilla.....	3,001.18
Skins.....	1,241.80
Vanilla.....	613.47
Total.....	71,693.59

*Total from Nuevo Laredo and consulates thereunder.*

American products returned.....	\$77,281.01
Animals, live.....	274,378.50
Anise seed.....	78.84
Asphaltum.....	36.50
Argentiferous lead.....	2,312,171.19
Beans.....	3,823.21
Books.....	92.00
Bones and horns.....	3,526.58
Bran.....	331.44
Bricks, clay.....	98.60
Bullion:	
Gold.....	527,094.99
Silver.....	1,025,049.41
Silver and lead mixed.....	122,354.52
Copper and matte.....	122,254.41
Base.....	137,217.93
Cedar and mahogany woods.....	18,246.18
Chicle (chewing gum).....	43,940.50
Chick-pease ("Garbanzos").....	150.00

No. 175—3.

Coal.....	\$26,981.68
Coffee.....	10,646.00
Cotton goods.....	68.00
Cotton seed.....	52.96
Cotton-seed meal.....	1,681.90
Cutlery.....	214.54
Concentrates.....	9,211.40
Cyanides.....	4,690.00
Earthenware.....	361.87
Eggs.....	48.00
Feathers.....	46.28
Fish, dried.....	330.00
Fustic (dyewood).....	7,756.20
Hats, wool and palm.....	486.21
Hair, horse and cow.....	13,643.56
Hides.....	99,255.21
Honey.....	16,027.21
Ixtle (fiber).....	44,135.45
Instrument of agriculture (sample).....	2.00
Jalap.....	15.00
Jewelry.....	205.00
Leather, sole.....	4,673.68
Manuscript.....	761.00
Metates (grinding stones).....	22.58
Mescal (liquor).....	660.00
Mineral water.....	110.00
Morrales (ixtle bags).....	120.00
Music.....	404.35
Nuts, unshelled.....	12.50
Opals.....	730.00
Opium.....	730.00
Oranges.....	59,064.76
Ores:	
Gold.....	18,068.00
Silver.....	794,996.47
Copper.....	4,580.00
Antimony.....	1,236.28
Graphite.....	2,895.00
Parrots.....	822.53
Pepper.....	10,929.85
Pictures.....	89.00
Plants.....	100.00
Pottery.....	164.50
Rubber.....	2,560.67
Statuettes.....	72.00
Strawberries.....	13.00
Silver sulphides.....	42,755.68
Sugar, crude.....	1,921.60
Sweetmeats.....	18.20
Skins (goat, deer, hog, sheep, and wild cat).....	315,211.99
Tobacco.....	266.52
Used postage stamps.....	25.00
Vanilla.....	5,143.47
Wax (bees').....	1,055.34
Wheat.....	165.00
White lead.....	7.48
Wine.....	400.00
Wool.....	379.60
Woolen goods.....	2,283.10
Total.....	6,197,343.75
Total for preceding quarter.....	3,760,658.45
Increase.....	2,436,685.30



## NETHERLANDS.

[Report by Consul Downes.]

*Amsterdam.*

Aniline colors.....	\$785.35
Antiquities.....	5,974.30
Arrack.....	754.45
Bagging.....	1,651.10
Beans.....	803.67
Books and printed matter.....	3,849.76
Buffalo skins.....	1,159.54
Bulbs and plants.....	7,968.84
Caraway seed.....	20,328.55
Cassia vera.....	2,870.81
Cauliflower.....	942.00
Cheese.....	28,451.42
Cinchona bark.....	11,788.94
Cloves.....	419.58
Cocoa.....	145,205.10
Cocoa beans.....	27,544.76
Cocoa butter.....	49,349.25
Coffee.....	254,688.73
Cotton tares.....	6,896.16
Diamonds*.....	641,622.19
Ebony wood.....	878.38
Engravings.....	836.00
Garden seeds.....	13,327.76
Gin.....	1,453.96
Goatskins.....	19,312.76
Gums.....	1,716.50
Hams.....	632.46
Herrings.....	342.04
Household goods (emigrants').....	5,120.00
Indigo.....	14,402.84
Linseed.....	193,177.12
Liqueurs.....	6,469.53
Lizard skins.....	9,325.84
Madder.....	3,436.84
Matches.....	2,900.45
Metallic capsules.....	1,684.00
Nutmegs.....	17,754.24
Oils (haarlem, etc.).....	4,081.34
Paintings.....	23,366.36
Paper.....	1,042.12
Peat moss (turf litter).....	2,726.52
Pepper.....	11,196.24
Plate glass.....	26,918.80
Poppy seed.....	445.62
Prusicate of potash.....	6,064.87
Rags.....	11,965.96
Rice.....	151,766.19
Rubber.....	3,429.18
Sardelles.....	1,528.72
Sheepskins.....	179.00
Sauerkraut.....	1,083.00
Straw covers.....	452.00
Sugar (refined).....	13,422.80
Swan skins.....	271.58
Tea.....	376.00
Tiles.....	1,073.69
Tin (Banka and Straits).....	224,377.75

Tobacco, Sumatra†.....	\$2,011,645.32
Miscellaneous.....	2,341.20
Total.....	4,005,579.48
Total for same quarter in 1893.....	2,086,784.36
Increase.....	1,918,795.12

*Rotterdam (including Flushing and Schiedam).*

Antiquities.....	\$1,963.76
Bagging.....	2,567.34
Balances.....	1,357.58
Bleaching powder.....	3,232.99
Books and printed matter.....	2,472.91
Bottles and cases.....	764.25
Bulbs and plants.....	45,991.55
Candle pitch.....	2,868.59
Carbolicum.....	629.60
Cassia vera.....	3,720.79
Cheese.....	14,858.16
Church symbols.....	845.68
Cocoa butter.....	1,934.00
Coffee.....	182,953.46
Earthenware.....	3,322.90
Flax and tow.....	21,942.14
Gin.....	34,887.74
Glycerin.....	23,582.76
Gums.....	1,578.78
Hardware.....	536.58
Herrings.....	175,155.70
Household goods (emigrants').....	263.60
Hyposulphate of soda.....	1,162.67
Indigo.....	4,224.00
Machinery.....	400.00
Madder.....	3,058.19
Matches.....	2,512.90
Metallic capsules.....	889.52
Mineral water.....	5,970.31
Nutmegs.....	2,015.49
Oils (haarlem, etc.).....	2,873.68
Paintings.....	11,983.40
Paints.....	1,338.25
Paper.....	562.04
Peat moss (turf litter).....	5,604.69
Pipes.....	1,053.64
Pitch.....	512.86
Rags.....	35,229.52
Roots and herbs.....	894.16
Rubber.....	53,523.20
Seeds.....	112.30
Silverware.....	9,505.58
Skins and hides.....	309.09
Spelter.....	1,069.87
Straw covers.....	1,389.72
Tallow and lard.....	268.08
Tea.....	377.98
Tin (Banka and Straits).....	11,542.52
Tobacco, Sumatra†.....	9,688.96
Tortoise shells.....	3,688.00
Vegetables in brine.....	5,983.61
Wine.....	1,337.65
Wool.....	2,327.16

\* Polished, \$507,873.39; rough, \$133,748.80.

† From Amsterdam, 9,235 bales; from Rotterdam, 79 bales.

Woolen manufactures.....	\$956.43
Miscellaneous.....	1,074.12
Total.....	710,986.39
Total for same quarter in 1893..	570,288.84
Increase.....	140,697.55

*Total from Netherlands.*

Aniline colors.....	\$785.35
Antiquities.....	7,938.06
Arrack.....	754.45
Bagging.....	4,218.44
Balances.....	1,357.58
Beans.....	803.67
Bleaching powder.....	2,232.99
Books and printed matter.....	6,322.67
Bottles and cases.....	764.25
Buffalo skins.....	1,159.54
Bulbs and plants.....	53,960.39
Candle pitch.....	2,898.59
Caraway seed.....	20,328.55
Carbolicum.....	629.60
Cassia vera.....	6,591.60
Cauliflower.....	942.00
Cheese.....	43,309.58
Church symbols.....	845.68
Cinchona bark.....	11,788.94
Cloves.....	419.58
Cocoa.....	145,205.10
Cocoa beans.....	27,544.76
Cocoa butter.....	51,283.25
Coffee.....	437,642.19
Cotton tares.....	6,806.16
Diamonds*.....	641,622.19
Earthenware.....	3,322.90
Ebony wood.....	878.38
Engravings.....	836.00
Flax and tow.....	21,942.14
Garden seeds.....	13,327.76
Gin.....	36,341.70
Glycerin.....	23,582.76
Goatskins.....	19,312.76
Gums.....	3,295.28
Hams.....	632.46
Hardware.....	536.58
Herrings.....	175,497.74
Household goods (emigrants').....	5,383.60
Hyposulphate of soda.....	1,162.67
Indigo.....	18,626.84
Linseed.....	193,177.12
Liqueurs.....	6,469.53
Lizard skins.....	9,325.84
Machinery.....	400.00
Madder.....	6,495.03
Matches.....	5,413.35
Metallic capsules.....	2,573.52
Mineral water.....	5,970.31
Nutmegs.....	19,769.73
Oils (haailem, etc.).....	6,955.02
Paintings.....	35,349.76
Paints.....	1,338.25
Paper.....	1,604.16

Peat moss (turf litter).....	\$8,331.21
Pepper.....	11,196.24
Pipes.....	1,053.64
Pitch.....	512.86
Plate glass.....	26,918.80
Poppy seed.....	445.62
Prusicate of potash.....	6,064.87
Rags.....	47,255.48
Rice.....	151,766.19
Roots and herbs.....	894.16
Rubber.....	56,952.38
Sardelles.....	1,528.72
Seeds.....	118.30
Sheepskins.....	179.00
Silverware.....	9,505.58
Skins and hides.....	309.09
Spelter.....	1,089.87
Sauerkraut.....	1,083.00
Straw covers.....	1,841.72
Sugar (refined).....	13,422.80
Swan skins.....	271.58
Tallow and lard.....	268.02
Tea.....	753.98
Tiles.....	1,073.69
Tin (Banka and Straits).....	235,920.27
Tobacco, Sumatra†.....	2,021,334.28
Tortoise shells.....	3,688.00
Vegetables in brine.....	5,983.61
Wine.....	1,337.65
Wool.....	2,327.16
Woolen manufactures.....	956.43
Miscellaneous.....	3,415.32
Total.....	4,716,565.87
Total for same quarter in 1893..	2,657,073.20
Increase.....	2,059,492.67

## NEW ZEALAND.

[Report by Consul Connolly.]

*Auckland.*

Coffee.....	\$574.00
Flax fiber.....	1,362.00
Gum (kauri).....	416,412.00
Hides.....	1,588.00
Mutton casings.....	20,849.00
Pelts (sheep).....	701.00
Skins (rabbit).....	2,745.00
Wool.....	306.00
Total.....	444,537.00

## RUSSIA.†

[Report by Consul-General Karel.]

*Batoum.*

Licorice root.....	\$56,318.54
Manganese ore.....	53,910.82
Wool.....	27,949.46
Total.....	138,178.82

\* Polished, \$507,873.39; rough, \$133,748.80.

† From Amsterdam, 9,235 bales; from Rotterdam, 79 bales.

‡ No exports were declared for the United States during the quarter at Abo, Cronstadt, Reval, Taganrog, or Wiborg.

<i>Helsingfors.</i>	
Cardboard.....	\$320. 38

<i>Libau.</i>	
Goatskins.....	\$30,092. 36

<i>Moscow.</i>	
Albumen (egg).....	\$1,447. 97
Camels' hair.....	71,541. 18
Caviare.....	266. 94
Goatskins.....	111,468. 05
Horse manes.....	19,431. 28
Licorice root.....	315. 52
Lycopodium.....	655. 86
Papier-maché articles.....	386. 11
Rubber waste.....	326. 20
Sheep casings.....	314. 57
Soap.....	213. 13
Sundries.....	102. 15
Tea.....	270. 35
Wooden articles.....	232. 97
Wood tar.....	120. 84
Wool.....	180,480. 47
Total.....	387,573. 59

<i>Odessa.</i>	
Blighted corn.....	\$188. 41
Coriander seed.....	103. 95
Sundries.....	582. 27
Tobacco.....	363. 09
Wool.....	12,297. 95
Total.....	113,535. 67

<i>Riga.</i>	
Books (Hebrew).....	\$605. 33
Hemp.....	18,956. 86
Liquors.....	837. 91
Skins.....	38,224. 85
Total.....	58,624. 95

<i>Rostoff.</i>	
Barley.....	\$25,013. 34
Camels' hair.....	1,401. 06
Wool.....	391,631. 06
Total.....	418,045. 46

<i>St. Petersburg.</i>	
Albumen (blood).....	\$7,912. 50
Boltropes.....	9,698. 15
Bristles.....	95,487. 82
Bronzes.....	5,558. 40
Crash.....	38,266. 50
Dressed leather.....	489. 60
Fish bladders.....	2,026. 43
Goatskins.....	24,855. 62
Horse hides.....	14,700. 15
Iron sheets.....	2,079. 50
Lycopodium.....	4,631. 11
Machinery.....	865. 00
Oakum.....	4,528. 30
Papier-maché articles.....	991. 25

Silverware.....	\$7,311. 51
Sundries.....	100. 00
Tow.....	7,648. 25
Total.....	227,150. 09

<i>Warsaw.</i>	
Hops, dry.....	\$123. 40

<i>Total from Russia.</i>	
Albumen :	
Blood.....	\$7,912. 50
Egg.....	1,447. 97
Barley.....	25,013. 34
Boltropes.....	9,698. 15
Books (Hebrew).....	605. 33
Blighted corn.....	188. 41
Bristles.....	95,487. 82
Bronzes.....	5,558. 40
Cardboard.....	320. 38
Camels' hair.....	72,942. 24
Caviare.....	266. 94
Coriander seed.....	103. 95
Crash.....	38,266. 50
Dressed leather.....	489. 60
Fish bladders.....	2,026. 43
Goatskins.....	166,416. 03
Hemp.....	18,956. 86
Hops, dry.....	123. 40
Horse hides.....	14,700. 15
Horse manes.....	19,431. 28
Iron sheets.....	2,079. 50
Licorice root.....	56,634. 06
Liquors.....	837. 91
Lycopodium.....	5,286. 97
Machinery.....	865. 00
Manganese ore.....	53,920. 82
Oakum.....	4,528. 30
Papier-maché articles.....	1,377. 36
Rubber waste.....	326. 20
Sheep casings.....	314. 57
Silverware.....	7,311. 51
Skins.....	38,224. 85
Soap.....	213. 13
Sundries.....	784. 42
Tea.....	270. 35
Tobacco.....	363. 09
Tow.....	7,648. 25
Wooden articles.....	232. 97
Wood tar.....	120. 84
Wool.....	712,358. 94
Total.....	1,373,644. 72
Total for preceding quarter.....	931,147. 29
Increase.....	442,497. 43

## SPAIN.

[Report by Minister Taylor.]

<i>Alicante.</i>	
Almonds.....	\$42,622. 00
Licorice (root).....	6,928. 00
Mats.....	366. 00
Total.....	49,916. 00

<i>Almeria.</i>	
Grapes.....	\$258,152.71

<i>Barcelona.</i>	
Bags.....	\$2,058.47
Cork.....	87.96
Glycerin.....	33,982.67
Licorice (root).....	3,906.11
Marble baths.....	197.11
Mineral water.....	2,639.24
Pepper.....	679.77
Rosemary.....	568.23
Saffron.....	408.58
Skins.....	10,197.79
Tartar.....	27,369.59
Wine.....	1,493.52
Wool.....	165.40
Total.....	83,754.44

<i>Bilbao.</i>	
Sausages.....	\$59.83
Wine.....	103.35
Total.....	163.18

<i>Cadiz.</i>	
Carbonate of magnesia.....	\$619.91
Canary seed.....	6,182.94
Cork.....	9,934.48
Cork wood.....	65,629.85
Cupreous sulphur ore.....	19,948.07
Iron pyrites.....	40,309.16
Licorice:	
Paste.....	6,282.15
Root.....	3,074.10
Olives.....	39,569.64
Paintings.....	19,409.24
Soap.....	315.55
Wool.....	56.74
Total.....	211,331.83

<i>Carthagena.</i>	
Iron ore (manganiferous).....	\$12,921.50

<i>Denia.</i>	
Onions.....	\$10,639.00
Pomegranates.....	156,772.00
Total.....	167,411.00

<i>San Felu de Guixols.</i>	
Cork.....	\$54,477.30

<i>Grao.</i>	
Saffron.....	\$1,337.29
Skins.....	6,156.48
Wine.....	1,057.07
Total.....	8,550.84

<i>Malaga.</i>	
Almonds.....	\$102,205.09
Brandy.....	347.34

Lemons.....	\$41,921.14
Olives.....	63.44
Orange peel.....	236.30
Palm-leaf hats.....	8,247.08
Pomegranates.....	665.00
Pepper.....	543.53
Raisins.....	67,382.90
Wine.....	2,040.59
Total.....	223,652.37

<i>Madrid.</i>	
Antiquities.....	\$199.17
Books.....	328.50
Paintings.....	1,095.66
Skins.....	30,803.85
Soap.....	7,019.43
Total.....	39,446.61

<i>San Sebastian.</i>	
Pepper.....	\$253.31

<i>Tarragona.</i>	
Almonds.....	\$20,849.46
Wine.....	8,711.50
Total.....	29,560.96

<i>Jeres de la Frontera.</i>	
Wine.....	\$145,406.11

<i>Total from Spain.</i>	
Almonds.....	\$165,676.55
Antiquities.....	199.17
Bags.....	2,058.47
Books.....	328.50
Brandy.....	347.34
Carbonate of magnesia.....	619.91
Canary seed.....	6,182.94
Cork.....	64,499.74
Cork wood.....	65,629.85
Cupreous sulphur ore.....	19,948.07
Glycerin.....	33,982.67
Grapes.....	258,152.71
Iron pyrites.....	40,309.16
Iron ore (manganiferous).....	12,921.50
Lemons.....	41,921.14
Licorice:	
Paste.....	6,282.15
Root.....	13,908.21
Marble baths.....	197.11
Mineral water.....	2,639.24
Mats.....	366.00
Olives.....	39,633.04
Onions.....	10,639.00
Orange peel.....	236.30
Paintings.....	20,504.90
Palm-leaf hats.....	8,247.08
Pomegranates.....	157,437.00
Pepper.....	1,476.61
Raisins.....	67,382.90
Rosemary.....	568.23
Saffron.....	1,745.87
Sausages.....	59.83

Skins.....	\$47,158.12
Soap.....	7,334.98
Tartar.....	27,369.59
Wine.....	153,812.14
Wool.....	222.14
Total.....	1,284,998.16
Total for preceding quarter.....	1,283,488.47
Increase.....	1,509.69

## SWEDEN AND NORWAY.

[Report by Consul O'Neil.]

<i>Arendal.</i>	
Miscellaneous.....	\$21.37
<i>Bergen.</i>	
Anchovies.....	\$2,728.27
Cod-liver oil.....	52,233.20
Fish (dried).....	11,795.20
Herrings.....	23,705.35
Mackerel.....	1,939.05
Miscellaneous.....	5,579.48
Total.....	98,040.55
Total for same quarter in 1893..	148,767.44

<i>Christiania.</i>	
Cod-liver oil.....	\$11,088.10
Herrings.....	9,117.80
Mackerel.....	3,031.72
Miscellaneous.....	14,562.47
Wood pulp.....	74,415.30
Total.....	112,215.39
Total for same quarter in 1893..	166,011.00

<i>Christiansand.</i>	
Mackerel.....	\$7,928.32
Total for same quarter in 1893..	11,880.20

<i>Drontheim.</i>	
Herrings.....	\$240.66
Miscellaneous.....	525.79
Wood pulp.....	18,109.54
Total.....	18,875.99
Total for same quarter in 1893..	21,422.88

<i>Gothenberg.</i>	
Anchovies.....	\$5,517.40
Iron:	
Bars.....	39,542.75
Nail rods.....	42,669.08
Pig iron.....	17,737.60
Scrap iron.....	14,485.70
Wire rods.....	21,492.16
Matches.....	35,935.26
Miscellaneous.....	9,074.87
Steel-wire rods.....	577.65
Wood pulp.....	25,740.29
Total.....	212,772.76

<i>Helsingborg.</i>	
Miscellaneous.....	\$119.45

<i>Malmö.</i>	
Miscellaneous.....	\$1,438.21

<i>Stavanger.</i>	
Anchovies.....	\$6,542.39
Fish (dried).....	168.24
Herrings.....	12,341.19
Mackerel.....	12,877.22
Miscellaneous.....	6,243.53
Total.....	38,172.57
Total for same quarter in 1893..	62,228.14

<i>Stockholm.</i>	
Cement.....	\$7,497.52
Iron.....	150,195.77
Nail rods.....	41,464.08
Pig iron.....	17,113.97
Wire rods.....	64,408.27
Machinery.....	14,536.55
Miscellaneous.....	12,066.18
Steel.....	82,435.75
Steel-wire rods.....	5,817.91
Total.....	394,536.00
Total for same quarter in 1893..	232,503.56

*Total from Sweden and Norway.*

Anchovies.....	\$14,848.06
Cement.....	7,497.52
Cod-liver oil.....	63,321.30
Fish (dried).....	11,963.44
Herrings.....	45,405.00
Iron.....	150,195.77
Bars.....	39,542.75
Nail rods.....	84,133.16
Pig iron.....	33,851.57
Scrap iron.....	14,485.70
Wire rods.....	85,900.43
Machinery.....	14,536.55
Mackerel.....	25,776.31
Matches.....	35,935.26
Miscellaneous.....	49,631.35
Steel.....	82,435.75
Steel-wire rods.....	6,395.56
Wood pulp.....	118,265.13
Total.....	884,120.61
Total for preceding quarter.....	732,945.60
Increase.....	151,175.01

## SWITZERLAND.

[Report by Consul-General Richman.]

<i>Basle.</i>	
Absinthe.....	\$10,060.08
Aniline colors.....	93,945.79
Asphalt.....	4,772.00
Books.....	499.79
Chocolate.....	4,294.54

Clothing (knit).....	\$1,752.32
Dyestuffs and chemicals.....	62,110.26
Hides (salted).....	46,111.58
Machinery.....	3,429.80
Ribbons, silk and mixed.....	222,410.81
Silk (spun waste).....	33,906.35
Spirits.....	376.23
Sundries.....	1,248.49
Watches and watch materials.....	236,867.80
Total.....	721,785.84
Total for same quarter in 1893.....	503,356.81

*Berne.*

Cheese.....	\$132,323.53
Silk tissues.....	24,405.64
Straw goods.....	1,495.75
Sundries.....	4,180.85
Underwear.....	9,133.85
Watches and watch materials.....	1,017.35
Wood carvings.....	815.06
Total.....	173,372.03
Total for same quarter in 1893.....	145,948.62

*Geneva.*

Aniline colors.....	\$2,731.66
Chloride of ethyl.....	632.08
Chromos.....	100.62
Condensed milk.....	29,449.29
Furs.....	508.75
Hardware.....	10,234.21
Household goods.....	313.63
Jewelry.....	877.04
Leather.....	17,388.91
Machinery.....	379.25
Marble.....	287.38
Musical boxes.....	38,918.62
Paintings.....	377.89
Sundries.....	328.10
Watches and watch materials.....	41,594.37
Wines.....	1,588.68
Total.....	145,710.48
Total for same quarter in 1893.....	174,721.45

*Horgen.*

Cheese.....	\$5,807.48
Church articles.....	1,223.61
Condensed milk.....	17,152.87

Silk:	
Embroideries and half-silk piece goods.....	324,401.49
Spun.....	5,422.34
Sundries.....	7,211.85
Sugar of milk.....	658.90
Total.....	361,878.54
Total for same quarter in 1893.....	242,386.02

*St. Gall.*

Church articles.....	\$969.64
Condensed milk.....	2,016.46
Cotton:	
Cloth.....	33,067.24
Embroideries.....	1,592,695.52

Curtains.....	\$199,828.84
Dresses, aprons, handkerchiefs, ties, etc.....	195,440.02
Laces.....	22,702.23
Postage stamps (used).....	518.34
Silk:	
Bolting cloth.....	24,374.51
Embroideries.....	18,221.17
Sundries.....	844.73
Underwear.....	1,764.23
Total.....	2,092,442.93
Total for same quarter in 1893.....	1,638,945.06

*Zurich.*

Aluminium.....	\$379.63
Beef extract.....	3,820.86
Casings for sausages.....	1,003.60
Cheese.....	16,125.26
Conserves.....	343.44
Cotton:	
Cloth.....	13,154.84
Embroideries.....	1,609.66
Yarn.....	203.13
Elastics.....	850.10
Hardware.....	93.55
Grease.....	984.30
Household goods.....	476.52
Knit goods.....	16,257.02
Musical instruments.....	105.04
Photographs.....	128.92
Ribbons, silk and mixed.....	7,592.65
Scientific instruments.....	510.13
Silk:	
Bolting cloth.....	42,367.02
Embroideries.....	104.22
Embroideries and half-silk piece goods.....	589,261.82
Spun.....	11,398.22
Straw goods.....	207,769.89
Sundries.....	57.90
Velvets.....	1,897.00
Wine.....	135.87
Woolens:	
Piece goods.....	12,091.05
Yarns.....	7,103.26
Total.....	935,824.90
Total for same quarter in 1893.....	667,680.96

*Total from Switzerland.*

Absinthe.....	\$10,060.08
Aluminium.....	379.63
Aniline colors.....	96,677.45
Asphalt.....	4,772.00
Beef extract.....	3,820.86
Books.....	499.79
Casings for sausages.....	1,003.60
Cheese.....	154,256.27
Chocolate.....	4,294.54
Chloride of ethyl.....	632.08
Chromos.....	100.62
Church articles.....	2,193.25
Clothing (knit).....	1,752.32
Condensed milk.....	48,618.62
Conserves.....	343.44

## Cotton:

Cloth.....	\$46,222.08
Embroideries .....	1,594,305.18
Yarn .....	203.13
Curtains.....	199,828.84
Dresses, aprons, handkerchiefs, ties, etc.....	195,440.02
Dyestuffs and chemicals.....	62,110.26
Elastics .....	850.10
Furs .....	508.75
Hardware .....	10,327.76
Grease .....	984.30
Household goods.....	790.15
Hides (salted).....	46,111.58
Jewelry .....	877.04
Knit goods.....	16,257.02
Laces.....	22,702.23
Leather .....	17,388.91
Machinery.....	3,809.05
Marble.....	287.38
Musical:	
Boxes.....	38,918.62
Instruments .....	105.04
Photographs.....	128.92
Postage stamps (used).....	518.34
Paintings.....	377.89
Ribbons, silk and mixed.....	230,003.46
Scientific instruments.....	510.13
Silk:	
Bolting cloth.....	66,741.53
Embroideries .....	18,325.39
Embroideries and half-silk piece goods.....	913,663.31
Spun waste.....	33,906.35
Spun.....	16,820.56
Tissues.....	24,405.64
Spirits.....	376.23
Straw goods.....	209,265.64
Sundries .....	13,871.92
Sugar of milk.....	658.90
Underwear .....	10,898.08
Velvets .....	10,898.08
Watches and watch materials.....	279,479.52
Wine.....	1,724.55
Wood carvings.....	815.06
Woolen:	
Piece goods.....	12,091.05
Yarns.....	7,103.26
Total.....	4,431,014.72
Total for same quarter in 1893.....	3,373,038.92
Increase.....	1,057,975.80

## TURKEY.\*

[Report by Consul-General Short.]

## Beirut.

Glassware, ancient.....	\$1,088.20
Licorice root.....	32,886.00
Oriental articles and bazaar goods.....	6,964.67
Soap (white castile).....	1,175.88
Wool.....	134,218.08
Total.....	176,332.83

## Constantinople.

Attar of roses.....	\$98,753.09
Pure.....	1,626.32
Carpets and rugs.....	191,509.65
Embroideries.....	5,019.35
Gum tragacanth.....	15,217.60
Guts, sheep.....	2,325.98
Meerschaum.....	3,666.91
Mohair.....	64,248.52
Nuts.....	308.00
Opium.....	78,164.10
Oriental articles and bazaar goods.....	5,658.10
Roans.....	9,359.23
Rubber waste.....	424.64
Skins (goat and kid).....	147,306.68
Slippers.....	952.70
Sundries.....	5,546.86
Tobacco.....	4,509.06
Wool.....	29,165.84
Total.....	663,762.63

## Jerusalem.

Mother-of-pearl work.....	\$1,106.00
Olive-wood work.....	19.30
Stones of the Holy Land.....	61.76
Sundries.....	136.64
Total.....	1,323.70

## Smyrna.

Carpets and rugs.....	\$49,342.74
Emery stone.....	17,701.64
Figs.....	159,147.30
Licorice root.....	131,934.62
Nutgalls.....	735.41
Oil, olive.....	15,695.98
Opium.....	57,843.28
Raisins.....	110,844.98
Seed (millet).....	523.95
Skins (goat and kid).....	4,417.91
Soap (white castile).....	1,160.19
Sundries.....	118.23
Tobacco.....	2,583.10
Wool.....	59,596.24
Total.....	611,645.57

## Total from Turkey.

Attar of roses.....	\$98,753.09
Pure.....	1,626.32
Carpets and rugs.....	240,852.39
Embroideries.....	5,019.35
Emery stone.....	17,701.64
Figs.....	159,147.30
Glassware, ancient.....	1,088.20
Gum tragacanth.....	15,217.60
Guts, sheep.....	2,325.98
Licorice root.....	164,820.62
Meerschaum.....	3,666.91
Mohair.....	64,248.52
Mother-of-pearl work.....	1,106.00
Nutgalls.....	735.41
Nuts.....	308.00
Oil, olive.....	15,695.98

\*No exports were declared at Bagdad or Sivas during the quarter.

Olive-wood work.....	\$19. 30
Opium.....	136,007. 38
Oriental articles and bazaar goods.....	12,622. 77
Raisins.....	110,844. 98
Roans.....	9,359. 23
Rubber waste.....	424. 64
Seed (millet).....	523. 95
Skins (goat and kid).....	151,724. 59
Slippers.....	952. 70

Soap (white castile).....	\$2,336. 07
Stones of the Holy Land .....	61. 76
Sundries.....	5,801. 73
Tobacco.....	7,092. 16
Wool.....	222,980. 16
Total.....	1,453,064. 73
Total for preceding quarter.....	1,484,761. 47
Decrease.....	31,696. 74

## THE UNITED KINGDOM.

[For the quarter ending September 30, 1894.—Report by Consul-General Collins.]

*Belfast.*

Beer, ale, stout, etc.....	\$32,895. 26
Cotton manufactures.....	203,544. 53
Hats and felt.....	3,276. 13
Hemp, flax, tow, etc.....	138,043. 52
Linens.....	1,877,721. 71
Machinery.....	1,913. 25
Seeds, plants, etc.....	3,184. 09
Stationery, etc.....	5,339. 17
Thread.....	42,184. 44
Unions.....	97,636. 38
Wines and spirits.....	2,334. 89
All other articles.....	2,160. 89
Total.....	2,410,234. 26
Total for same quarter in 1893.....	1,826,142. 07

*Birmingham.*

Animals.....	\$1,070. 63
Buttons.....	1,693. 19
Carpets and rugs.....	2,042. 73
Cotton manufactures.....	3,252. 68
Cycles.....	9,222. 20
Drugs, chemicals, dyes, etc.....	58,863. 52
Glass, china, and earthen ware.....	41,443. 07
Glue and gelatin.....	2,905. 93
Hardware.....	137,279. 21
Metals:	
- Iron and steel and manufactures.....	100,626. 08
Other .....	12,170. 02
Preserves, pickles, etc.....	9,903. 09
Saddlery.....	35,092. 67
Skins, hides, furs, etc.....	55,167. 09
Unions.....	3,049. 11
All other articles.....	73,167. 33
Total.....	546,948. 55
Total for same quarter in 1893.....	594,229. 84

*Bradford.*

Bags and bagging.....	\$207. 64
Card clothing.....	17,019. 47
Carpets and rugs.....	6,796. 17
Cotton:	
Raw.....	15,999. 75
Manufactures.....	137,363. 74
Drugs, chemicals, dyes, etc.....	787. 24
Grease, etc.....	1,702. 10
Hair (cattle, etc.).....	1,366. 80
Leather, etc.....	6,988. 44

Machinery.....	\$40,781. 95
Metals (iron and steel and manufactures).....	41,835. 50
Paper:	
Manufactures.....	768. 55
Stock.....	1,241. 15
Scientific instruments.....	904. 32
Silks.....	36,563. 06
Stuff goods.....	763,965. 40
Wool, camels' hair, etc.....	403,249. 94
Woolens.....	389,537. 93
Works of art.....	854. 80
Yarn.....	75,056. 03
All other articles.....	2,991. 82
Total.....	1,946,001. 80
Total for same quarter in 1893.....	1,774,941. 20

*Bristol.*

Books, prints, engravings, etc.....	\$3,892. 44
Bricks and tiles.....	260. 56
Cocoa and chocolate .....	4,805. 81
Drugs, chemicals, dyes, etc.....	18,626. 45
Elastic.....	2,490. 80
Fuller's earth.....	1,948. 71
Glue and gelatin.....	2,427. 51
Hemp, flax, tow, etc.....	1,717. 29
Ores (iron, etc.).....	2,482. 83
Rope, etc.....	1,576. 59
Skins, hides, furs, etc.....	9,852. 70
Tin plates, etc.....	10,128. 28
Wines and spirits.....	864. 34
Woolens.....	19,871. 08
All other articles.....	1,919. 50
Total.....	82,864. 89
Total for same quarter in 1893.....	69,376. 80

*Cardiff.*

Animals.....	\$14. 56
Books, prints, engravings, etc.....	522. 91
Bricks and tiles.....	498. 81
Coal and coke.....	24,448. 69
Drugs, chemicals, dyes, etc.....	116. 79
Machinery.....	979. 36
Metals (iron and steel and manufactures).....	262. 25
Rope, etc.....	1,758. 92
Tin.....	7,093. 81



Tin plates, etc.....	\$229,014.32
All other articles.....	34.06
<b>Total.....</b>	<b>264,744.51</b>
<b>Total for same quarter in 1893..</b>	<b>274,780.52</b>

*Cork.*

Drugs, chemicals, dyes, etc.....	\$363.66
Feathers.....	1,833.39
Fish.....	43,165.36
Metals.....	97.33
Seeds, plants, etc.....	170.69
Stone (marble, granite, etc.).....	1,021.47
Wines and spirits.....	2,003.91
All other articles.....	97.33
<b>Total.....</b>	<b>48,753.14</b>
<b>Total for same quarter in 1893..</b>	<b>59,314.99</b>

*Dublin.*

Animals.....	\$461.16
Bags and bagging.....	216.76
Beer, ale, stout, etc.....	169,840.83
Books, prints, engravings, etc.....	721.96
Feathers.....	893.51
Provisions (cheese, bacon, etc.).....	2,518.91
Sausage casings.....	1,739.77
Seeds, plants, etc.....	486.65
Skins, hides, furs, etc.....	6,777.33
Wearing apparel.....	146.00
Wines and spirits.....	8,913.21
Woolens.....	4,409.07
All other articles.....	1,088.88
<b>Total.....</b>	<b>198,214.04</b>
<b>Total for same quarter in 1893..</b>	<b>205,898.64</b>

*Dundee.*

Bags and bagging.....	\$58,486.16
Bricks and tiles.....	915.64
Burlaps.....	1,038,298.58
Carpets and rugs.....	11,546.90
Cotton manufactures.....	7,479.00
Fish.....	8,825.88
Fruits, nuts, and vegetables.....	654.79
Glass, china, and earthen ware.....	3,033.14
Hemp, flax, tow, etc.....	23,209.47
Jute.....	69,118.74
Leather, etc.....	9,509.23
Linens.....	451,722.99
Machinery.....	3,472.58
Ores (iron, etc.).....	805.00
<b>Paper:</b>	
Manufactures.....	9,612.84
Stock.....	8,012.16
Preserves, pickles, etc.....	7,279.31
Stone (marble, granite, etc.).....	74,076.98
Wines and spirits.....	1,683.97
Wool, camels' hair, etc.....	11,740.75
Woolens.....	5,586.73
Yarn.....	26,994.90
All other articles.....	70,583.70
<b>Total.....</b>	<b>1,902,649.44</b>
<b>Total for same quarter in 1893..</b>	<b>1,500,318.96</b>

*Dunfermline.*

Cotton manufactures.....	\$26,090.75
Floor cloth.....	50,470.58
Linens.....	474,117.41
All other articles.....	911.07
<b>Total.....</b>	<b>551,589.81</b>
<b>Total for same quarter in 1893..</b>	<b>436,318.69</b>

*Falmouth.*

China clay, etc.....	\$72,193.52
Fish.....	927.46
Tin.....	3,477.94
All other articles.....	310.14
<b>Total.....</b>	<b>76,849.06</b>
<b>Total for same quarter in 1893..</b>	<b>47,413.31</b>

*Glasgow.*

Animals.....	\$8,459.00
Beer, ale, stout, etc.....	1,924.63
Books, prints, engravings, etc.....	56,787.62
Carpets and rugs.....	27,981.72
Coal and coke.....	29,273.48
Cotton manufactures.....	199,696.61
Drugs, chemicals, dyes, etc.....	80,145.93
Fish.....	108,098.08
Fruits, nuts, and vegetables.....	1,935.18
Glass, china, and earthen ware.....	3,692.14
Gums.....	3,076.43
Hats and felt.....	1,588.32
Hemp, flax, tow, etc.....	74,384.68
Lace.....	32,112.80
Linens.....	15,746.75
Machinery.....	13,217.50
Metals (iron and steel and manufactures).....	9,779.74
Paper stock.....	7,644.94
Pitch and tar.....	8,089.60
Provisions (cheese, bacon, etc.).....	14,273.48
Silks.....	34,184.47
Skins, hides, furs, etc.....	24,897.30
Stone (marble, granite, etc.).....	4,666.06
Sugar.....	15,265.16
Thread.....	29,260.30
Unions.....	7,383.52
Wines and spirits.....	10,337.62
Wool, camels' hair, etc.....	94,677.62
Woolens.....	13,703.89
All other articles.....	22,669.01
<b>Total.....</b>	<b>954,953.58</b>
<b>Total for same quarter in 1893..</b>	<b>894,643.75</b>

*Huddersfield.*

Card clothing.....	\$10,367.89
Cotton manufactures.....	3,957.04
Drugs, chemicals, dyes, etc.....	36,511.56
Fuller's earth.....	3,893.45
Grease, etc.....	1,498.66
Linens.....	1,319.70
Machinery.....	657.82
Metals (iron and steel and manufactures).....	462.13
Silks.....	9,943.65
Stationery, etc.....	649.27

Thread.....	\$34,452.36
Wool, camels' hair, etc.....	5,818.47
Woolens.....	244,326.23
Total.....	353,857.73
Total for same quarter in 1893..	628,665.05

*Hull.*

Colors, paints, and varnishes.....	\$5,447.15
Drugs, chemicals, dyes, etc.....	3,497.48
Grease, etc.....	356.62
Hair, cattle, etc.....	414.80
Hemp, flax, tow, etc.....	3,221.63
Leather, etc.....	1,347.25
Metals (iron and steel and manufac- tures).....	96.92
Oils.....	1,107.33
Pitch and tar.....	791.35
Wool, camels' hair, etc.....	3,302.88
All other articles.....	197.40
Total.....	21,780.81
Total for same quarter in 1893..	44,961.33

*Leeds.*

Cocoa and chocolate.....	\$2,100.87
Drugs, chemicals, dyes, etc.....	6,772.20
Glass, china, and earthen ware.....	19,026.45
Leather, etc.....	4,937.86
Linen.....	1,314.18
Metals (iron and steel and manufac- tures).....	19,831.80
Seeds, plants, etc.....	215.95
Skins, hides, furs, etc.....	13,885.58
Wool, camels' hair etc.....	38,319.86
Woolens.....	96,247.59
Yarn.....	7,138.67
All other articles.....	1,420.06
Total.....	211,211.07
Total for same quarter in 1893..	177,327.03

*Leith.*

Beer, ale, stout, etc.....	\$2,944.80
Books, prints, engravings, etc.....	17,095.95
Clocks and watches.....	39.66
Cycles.....	102.32
Drugs, chemicals, dyes, etc.....	1,652.46
Feathers.....	62.53
Fish.....	8,110.04
Furniture.....	64.36
Glass, china, and earthen ware.....	247.65
Glue and gelatin.....	34,379.94
Grease, etc.....	13,171.47
Linen.....	733.14
Machinery.....	4,477.71
Oils.....	108.44
Paper stock.....	819.17
Provisions (cheese, bacon, etc.).....	695.75
Rope, etc.....	760.55
Skins, hides, furs, etc.....	2,816.22
Stationery, etc.....	900.40
Stone (marble, granite, etc.).....	106.25
Wines and spirits.....	13,518.24
Wool, camels' hair, etc.....	7,335.29
Woolens.....	48,404.95

Works of art.....	\$194.66
All other articles.....	1,350.92
Total.....	160,092.87
Total for same quarter in 1893..	143,008.08

*Liverpool.*

Animals.....	\$63,648.94
Bags and bagging.....	214,462.71
Beer, ale, stout, etc.....	37,457.43
Books, prints, engravings, etc.....	1,031.54
Bricks and tiles.....	14,893.32
Cement.....	66,510.41
China clay, etc.....	13,674.85
Coal and coke.....	48,815.84
Colors, paints, and varnishes.....	5,153.88
Cotton manufactures.....	134,473.38
Drugs, chemicals, dyes, etc.....	1,276,080.96
Fish.....	118,893.44
Floor cloth.....	23,548.97
Fruits, nuts, and vegetables.....	29,271.99
Furniture.....	8,339.74
Glass, china, and earthen ware.....	38,904.01
Glue and gelatin.....	423.38
Grease, etc.....	151,949.39
Hardware.....	6,446.38
Hats and felt.....	3,601.19
Hemp, flax, tow, etc.....	61,824.00
Machinery.....	4,112.18
Metals:	
Iron and steel and manufactures..	131,157.01
Other.....	18,833.33
Paper stock.....	61,030.77
Pitch and tar.....	3,007.49
Preserves, pickles, etc.....	209.25
Provisions (cheese, bacon, etc.).....	116.79
Rubber (raw).....	424,383.11
Saddlery.....	2,189.92
Salt.....	138,506.43
Sausage casings.....	987.89
Seeds, plants, etc.....	22,342.09
Skins, hides, furs, etc.....	196,348.66
Spices, etc.....	6,963.96
Stone (marble, granite, etc.).....	1,094.96
Sugar.....	595,793.35
Tea.....	16,258.96
Tin.....	22,303.16
Tin plates, etc.....	1,493,176.30
Wine and spirits.....	233.59
Woods.....	31,871.65
Wool, camels' hair, etc.....	439,282.91
All other articles.....	59,924.47
Total.....	5,990,133.98
Total for same quarter in 1893..	4,411,253.18

*London.*

Animals.....	\$233,154.74
Antimony.....	41,413.43
Artificial flowers.....	41,168.88
Bags and bagging.....	12,393.03
Beer, ale, stout, etc.....	79,368.68
Blacking.....	4,207.46
Books, prints, engravings, etc.....	456,550.27
Bristles.....	65,053.87
Brushes.....	12,641.58

Burlaps.....	\$42,890.69
Buttons.....	250.38
Carpets and rugs.....	23,655.89
Cement.....	233,015.99
Chalk.....	17,573.48
China clay, etc.....	3,213.69
Clocks and watches.....	10,602.16
Coal and coke.....	1,793.55
Cocoa and chocolate.....	61,229.90
Coffee.....	382,346.51
Colors, paints, and varnishes.....	73,774.13
Confectionery.....	10,463.66
Cotton:	
Raw.....	483.97
Manufactures.....	37,246.52
Drugs, chemicals, dyes, etc.....	478,360.48
Elastic.....	396.62
Emery and polishing powders.....	3,833.35
Feathers.....	145,300.15
Fish.....	3,274.67
Floor cloth.....	37,543.83
Fruits, nuts, and vegetables.....	57,218.20
Fuller's earth.....	12,223.67
Furniture.....	41,395.25
Glass, china, and earthen ware.....	45,832.13
Gloves, hosiery, etc.....	169,665.35
Glue and gelatin.....	13,643.11
Grease, etc.....	94,226.47
Gums.....	87,256.73
Hair (cattle, etc.).....	23,745.25
Hardware.....	7,678.12
Hats and felt.....	37,633.39
Hemp, flax, tow, etc.....	155,337.93
Indigo.....	134,845.10
Ivory.....	55,190.85
Jute.....	61,647.53
Lace.....	901.52
Leather, etc.....	41,841.03
Linens.....	30,724.16
Linseed.....	302,030.32
Machinery.....	8,888.28
Matches.....	2,795.01
Metals:	
Iron and steel and manufactures.....	8,338.74
Other.....	187,669.45
Mustard.....	45,054.83
Oils.....	104,045.56
Paper:	
Manufactures.....	42,553.27
Stock.....	85,383.70
Perfumery.....	13,663.84
Pitch and tar.....	55,816.46
Plumbago.....	1,436.84
Precious stones.....	854,152.28
Preserves, pickles, etc.....	134,102.71
Provisions (cheese, bacon, etc.).....	13,298.44
Rice.....	18,785.18
Rope, etc.....	1,009.07
Rubber:	
Raw.....	78,953.47
Manufactures.....	10,355.65
Saddlery.....	7,043.05
Sausage casings.....	33,312.41
Scientific instruments.....	17,803.71
Seeds, plants, etc.....	24,376.91
Shellac.....	145,392.99

Shells.....	\$125,325.99
Silks.....	69,878.68
Soaps.....	54,551.28
Skins, hides, furs, etc.....	1,536,010.35
Spices, etc.....	157,920.64
Sponges.....	11,460.93
Stationery, etc.....	39,851.58
Sticks and canes.....	11,589.59
Siraw:	
Plaits and braids.....	172,746.39
Other manufactures.....	1,595.12
Stone (marble, granite, etc.).....	10,993.52
Sugar.....	39,888.99
Tea.....	141,975.72
Tin.....	751,094.04
Tin plates, etc.....	30,736.99
Tobacco and cigarettes.....	26,938.94
Wearing apparel.....	26,432.66
Wines and spirits.....	67,921.19
Woods.....	46,420.33
Wool, camels' hair, etc.....	1,112,009.97
Woolens.....	480,894.75
Works of art.....	314,211.17
Yarn.....	684.45
All other articles.....	199,908.15
Total.....	11,170,510.59
Total for same quarter in 1893.....	7,771,637.19

*Manchester.*

Buttons.....	\$77.18
Card clothing.....	5,480.73
Carpets and rugs.....	12,507.15
Cotton:	
Raw.....	4,621.47
Manufactures.....	1,051,697.89
Drugs, chemicals, dyes, etc.....	198,270.18
Elastic.....	25,747.28
Feathers.....	11,039.53
Gloves, hosiery, etc.....	26,454.71
Hair (cattle, etc.).....	2,643.92
Hats and felt.....	13,551.00
Leather, etc.....	24,260.94
Linens.....	314,997.68
Machinery.....	128,492.51
Metals (iron and steel and manufactures).....	63,071.04
Paper:	
Manufactures.....	39,551.41
Stock.....	108,070.43
Rubber (manufactures).....	7,907.40
Silks.....	106,314.85
Wearing apparel.....	6,746.83
Woolens.....	20,689.02
Yarn.....	1,502.63
All other articles.....	32,791.27
Total.....	2,206,487.04
Total for same quarter in 1893.....	2,290,705.81

*Newcastle.*

Antimony.....	\$22,273.97
Books, prints, engravings, etc.....	915.17
Bricks and tiles.....	484.95
Cement.....	8,993.29
Coal and coke.....	6,253.45

Colors, paints, and varnishes.....	\$5,893.33
Cotton manufactures.....	19,894.25
Drugs, chemicals, dyes, etc.....	51,565.43
Leather, etc.....	2,963.70
Machinery.....	142.33
Metals (iron and steel and manufactures).....	8,642.71
Provisions (cheese, bacon, etc.).....	97.33
Rope, etc.....	2,486.78
Skins, hides, furs, etc.....	23,227.80
Stone (marble, granite, etc.).....	16,468.67
Woolens.....	3,532.78
All other articles.....	2,274.67
Total.....	176,110.61
Total for same quarter in 1893..	213,243.89

*Nottingham.*

Bricks and tiles.....	\$920.85
Colors, paints, and varnishes.....	1,432.29
Cotton manufactures.....	55,063.67
Cycles.....	1,626.96
Drugs, chemicals, dyes, etc.....	3,489.77
Elastic.....	43,087.22
Emery and polishing powders.....	2,365.73
Glass, china, and earthen ware.....	15,040.70
Gloves, hosiery, etc.....	152,605.34
Grease, etc.....	630.73
Lace.....	487,022.19
Leather, etc.....	7,684.28
Linens.....	57,032.81
Machinery.....	35,308.37
Metals (iron and steel and manufactures).....	350.32
Oils.....	471.09
Ores (iron, etc.).....	2,387.94
Rope, etc.....	386.10
Silks.....	37,816.81
Skins, hides, furs, etc.....	81,086.88
Stone (marble, granite, etc.).....	2,706.12
Woolens.....	2,036.39
All other articles.....	10,785.13
Total.....	1,001,337.69
Total for same quarter in 1893..	976,712.35

*Plymouth.*

Animals.....	\$2,457.58
China clay, etc.....	46,994.81
Drugs, chemicals, dyes, etc.....	6,899.48
Furniture.....	356.47
Metals (iron and steel and manufactures).....	1,277.33
Seeds, plants, etc.....	2,215.13
Wines and spirits.....	4,639.56
Total.....	64,840.36
Total for same quarter in 1893..	54,040.96

*Sheffield.*

Animals.....	\$30.66
Beer, ale, stout, etc.....	1,304.71
Colors, paints, and varnishes.....	1,844.59
Cutlery.....	210,686.08
Glue and gelatin.....	6,573.06
Hair (cattle, etc.).....	544.27

Linens.....	\$3,452.73
Machinery.....	2,368.23
Metals:	
Iron and steel and manufactures..	262,049.09
Other.....	756.02
Oils.....	555.23
Precious stones.....	8,381.79
Skins, hides, furs, etc.....	16,400.13
Unions.....	117.98
Wines and spirits.....	427.65
All other articles.....	11,080.67
Total.....	526,072.89
Total for same quarter in 1893..	362,806.59

*Southampton.*

Carpets and rugs.....	\$1,029.74
Furniture.....	252.57
Hair (cattle, etc.).....	447.17
Metals.....	1,600.00
Provisions (cheese, bacon, etc.).....	63.86
Skins, hides, furs, etc.....	10,650.00
Spices, etc.....	14,051.44
All other articles.....	20,852.22
Total.....	48,947.00
Total for same quarter in 1893..	22,437.43

*Swansea.*

Bricks and tiles.....	\$2,432.63
Coal and coke.....	62,158.94
Drugs, chemicals, dyes, etc.....	10,219.89
Grease, etc.....	250.66
Hemp, flax, tow, etc.....	348.70
Metals:	
Iron and steel and manufactures..	27,139.67
Other.....	6,019.44
Oils.....	3,121.81
Ores (iron, etc.).....	675.67
Stone (marble, granite, etc.).....	1,664.08
Tin plates, etc.....	1,506,355.78
Total.....	1,620,387.27
Total for same quarter in 1893..	1,658,995.72

*Tunstall.*

Beer, ale, stout, etc.....	\$145.33
Bricks and tiles.....	2,939.06
China clay, etc.....	3,697.04
Colors, paints, and varnishes.....	1,176.97
Elastic.....	574.25
Glass, china, and earthen ware.....	1,041,602.60
Hardware.....	875.97
Paper and manufactures.....	2,890.70
Skins, hides, furs, etc.....	525.58
Stationery, etc.....	510.98
Tin plates, etc.....	573.39
All other articles.....	807.84
Total.....	1,056,319.71
Total for same quarter in 1893..	796,679.68

*Total from United Kingdom.*

Animals.....	\$309,297.30
Antimony.....	63,637.40
Artificial flowers.....	41,168.88

Bags and bagging.....	\$285,766.30
Beer, ale, stout, etc.....	325,881.67
Blacking.....	4,207.46
Books, prints, engravings, etc.....	537,517.86
Bricks and tiles.....	23,345.82
Bristles.....	65,053.87
Brushes.....	12,641.58
Burlaps.....	1,081,189.27
Buttons.....	2,020.75
Card clothing.....	32,868.09
Carpets and rugs.....	85,560.30
Cement.....	308,519.69
Chalk.....	17,573.48
China clay, etc.....	139,773.91
Clocks and watches.....	10,641.82
Coal and coke.....	172,743.95
Cocoa and chocolate.....	68,136.58
Coffee.....	382,346.51
Colors, paints, and varnishes.....	94,222.34
Confectionery.....	10,463.66
Cotton:	
Raw.....	21,105.19
Manufactures.....	1,879,780.06
Cutlery.....	210,686.08
Cycles.....	10,951.48
Drugs, chemicals, dyes, etc.....	2,232,223.48
Elastic.....	72,296.17
Emery and polishing powders.....	6,199.08
Feathers.....	159,129.11
Fish.....	291,294.93
Floor cloth.....	111,563.38
Fruits, nuts, and vegetables.....	89,080.16
Fuller's earth.....	18,065.83
Furniture.....	51,008.38
Glass, china, and earthen ware.....	1,208,821.89
Gloves, hosiery, etc.....	348,725.40
Glue and gelatin.....	60,352.93
Grease, etc.....	264,786.10
Gums.....	90,333.16
Hair (cattle, etc.).....	30,162.20
Hardware.....	152,279.68
Hats and felt.....	59,650.03
Hemp, flax, tow, etc.....	458,087.22
Indigo.....	134,845.10
Ivory.....	55,190.85
Jute.....	130,766.27
Lace.....	520,036.51
Leather, etc.....	99,532.73
Linens.....	3,228,882.76
Linseed.....	302,030.32
Machinery.....	244,812.07
Matches.....	2,795.01
Metals:	
Iron and steel and manufactures..	674,920.33
Other.....	227,145.59

Mustard.....	\$45,054.83
Oils.....	109,409.46
Ores (iron, etc.).....	6,351.44
Paper:	
Manufactures.....	95,376.77
Stock.....	272,202.32
Perfumery.....	13,663.84
Pitch and tar.....	67,704.90
Plumbago.....	1,436.84
Precious stones.....	862,534.07
Preserves, pickles, etc.....	151,494.36
Provisions (cheese, bacon, etc.).....	31,064.56
Rice.....	18,785.18
Rope, etc.....	7,978.01
Rubber:	
Raw.....	503,336.58
Manufactures.....	18,263.05
Saddlery.....	44,325.64
Salt.....	138,506.43
Sausage casings.....	36,040.07
Scientific instruments.....	19,708.03
Seeds, plants, etc.....	52,991.51
Shellac.....	145,392.65
Shells.....	123,325.99
Silks.....	294,701.52
Soaps.....	54,551.28
Skins, hides, furs, etc.....	1,977,645.62
Spices, etc.....	178,936.04
Sponges.....	11,460.93
Stationery, etc.....	47,251.40
Sticks and canes.....	11,589.59
Straw:	
Plaits and braids.....	172,746.39
Other manufactures.....	1,595.12
Stuff goods.....	763,965.40
Stone (marble, granite, etc.).....	112,798.11
Sugar.....	650,947.50
Tea.....	158,234.68
Thread.....	105,897.10
Tin.....	783,908.95
Tin plates, etc.....	3,269,985.06
Tobacco and cigarettes.....	26,938.94
Unions.....	108,186.99
Wearing apparel.....	33,325.49
Wines and spirits.....	112,878.17
Woods.....	78,291.98
Wool, camels' hair, etc.....	2,115,737.69
Woolens.....	1,329,240.41
Works of art.....	315,260.63
Yarn.....	111,376.68
All other articles.....	477,326.53
Total.....	33,591,892.70
Total for same quarter in 1893..	27,235,852.96
Increase.....	6,356,039.74

## CUBA.\*

[For the quarter ending December 31, 1894.—Report by Consul-General Williams.]

*Baracoa.*

Bananas.....	\$21,504.59
Cocanuts.....	20,288.06
Cocanut oil.....	8,716.15
Total.....	50,508.80

*Cardenas.*

Beeswax.....	\$282.60
Cigars and cigarettes.....	359.43
Guava jelly.....	66.40
Lancewood spars.....	727.36
Sugar.....	818.52
Total.....	2,254.31

*Cienfuegos.*

Cigars and cigarettes.....	\$606.12
Guava jelly.....	46.20
Hides.....	550.02
Honey.....	2,314.29
Molasses.....	212.98
Sugar.....	42,594.63
Tobacco (leaf).....	10,743.21
Total.....	57,067.45

*Gibara.*

Beeswax.....	\$295.00
Cedar wood.....	2,576.24
Deerskins.....	180.00
Dyewood.....	52.22
Hides.....	962.72
Honey.....	190.00
Mahogany.....	1,202.45
Sugar.....	93,792.71
Sirup.....	915.41
Total.....	100,166.75

*Guanlanamo.*

Lignum-vitæ.....	\$478.60
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*Habana.*

Asphaltum.....	\$3,289.67
Bones.....	5,571.50
Cigars and cigarettes.....	655,705.52
Dyewood.....	227.78
Fruit.....	5,431.92
Glycerin (crude).....	2,484.09
Hides.....	2,438.07
Hair (raw).....	1,000.78
Hide clippings.....	4,685.59
Horns.....	383.79
Horns.....	525.72
Metals (old copper, brass, iron, etc.)..	11,112.94

Sugar.....	231.69
Sponges.....	11,646.53
Sundries.....	12,010.53
Tortoise shell.....	1,230.32
Tobacco (leaf).....	2,157,285.09
Total.....	2,875,261.53

*Manzanillo.*

Almiqui wood.....	\$327.16
Cedar wood.....	28,052.52
Dagame spars.....	125.00
Lancewood spars.....	68.00
Mahogany.....	12,601.20
Sugar.....	9,323.32
Total.....	50,497.20

*Matanzas.*

Molasses.....	\$4,201.93
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*Nuevitas.*

Beeswax.....	\$3,162.05
Hides.....	5,712.36
Sponges.....	569.09
Total.....	9,443.50

*Sagua la Grande.*

Sugar.....	\$3,209.59
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*San Juan de los Remedios.*

Tobacco (leaf).....	\$485.65
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*Santa Cruz.*

Cedar wood.....	\$27,408.60
Mahogany.....	3,672.47
Total.....	31,081.07

*Santiago de Cuba.*

Beeswax.....	\$3,712.05
Bones.....	458.15
Cigars and cigarettes.....	172.48
Cedar wood.....	3,653.52
Cocoa.....	2,083.28
Honey.....	411.47
Iron ore.....	68,172.50
Lignum-vitæ.....	1,150.00
Mahagua wood.....	29.67
Palm leaf.....	198.00
Paintings.....	582.50
Sugar.....	45,940.53
Tobacco (leaf).....	1,382.58
Total.....	127,946.73

\* Received too late for insertion in proper place.

<i>Zaza.</i>			
Beeswax.....	\$1,482.53	Glycerin (crude).....	\$2,484.09
Cedar wood.....	3,882.44	Hides.....	9,663.17
Logwood.....	490.51	Hair (raw).....	1,000.78
Mahogany.....	1,133.09	Hide clippings.....	4,685.59
Total.....	6,988.57	Hoofs.....	383.79
		Horns.....	525.72
		Honey.....	2,915.76
		Iron ore.....	68,172.50
		Lancewood spars.....	795.36
		Lignum-vitæ.....	1,628.60
		Logwood.....	490.51
		Metal (old copper, brass, iron, etc.)..	11,112.94
		Molasses.....	4,414.91
		Mahogany.....	18,609.21
		Mahagua wood.....	29.67
		Palm leaf.....	198.00
		Paintings.....	582.50
		Sugar.....	195,920.99
		Sponges.....	12,215.62
		Sundries.....	12,010.53
		Sirup.....	915.41
		Tortoise shell.....	1,230.32
		Tobacco (leaf).....	2,169,896.53
		Total.....	3,319,591.68
<i>Total from Cuba.</i>			
Almiqui wood.....	\$327.16		
Asphaltum.....	3,289.67		
Beeswax.....	8,934.23		
Bones.....	6,029.65		
Bananas.....	21,504.59		
Cigars and cigarettes.....	656,843.55		
Cedar wood.....	65,573.32		
Cocoa.....	2,083.28		
Cocoanuts.....	20,288.06		
Cocoanut oil.....	8,716.15		
Deerskins.....	180.00		
Dyewood.....	280.00		
Dagame spars.....	125.00		
Fruit.....	5,431.92		
Guava jelly.....	112.60		

## SWISS FORESTRY.

The third volume of the reports issued by the federal forestry experimental station is worthy of attention. This experimental institution was established, by federal law, on March 27, 1885. It is connected with a meteorological station, is a branch of the forestry department at the Federal Polytechnic School of Zurich, and is destined to serve not only the direct scientific improvements of Swiss forestry, but also for educational purposes. The superintendence is in charge of a commission, composed of seven members, the president of the school-council being its chairman, and the station is managed by an expert teacher of the forestry school, appointed by the federal council, who, in turn, is aided by two experienced assistants.

The experiments made at this station are published in annual reports, which, by direction of the supervising commission, are distributed gratis to the official foresters, to federal and cantonal authorities, public libraries, and forest owners, in whose forests experiments have been made. The experimental station was created in 1888, and provided for the necessary locations, as, for instance, the experimental garden on the "Adlisberg" near Zurich, etc. The first three reports forming the first volume were printed in 1891, the second volume in 1892, and the third has just been published.

It lies in the nature of the objects to be examined, as, for instance, the age of a forest, ranging from 30 to 100 years; the irregularity of the meteorological phenomena which permit the recognition of natural laws only after a long period, etc., that many of the results obtained in such a short time can not as yet be regarded as definite; but they will, no doubt, be a great help in making further experiments, and tend to ascertain a number of facts

which as yet are not fully explained. It will require many years before correct tables showing the growth of trees and the yield of forests can be issued, but results obtained up to date have already attained definite shape—for instance, as to experiments with seeds, methods of cultivation, physical and chemical examinations of woods, etc.

The foresters will find in these communications results of practical value, will gain knowledge of examinations and methods which otherwise would require much of their valuable time, and will be urged to make their own observations. Wood workers should also find very interesting details therein.

The first volume, issued by Prof. Dr. A. Buehler, of the central experimental station, contains, besides the history, the organization and arrangements of the institution, a general programme and résumé of the work done from 1888 to 1890, a description of the experimental garden situated in the forest of Adlisberg, together with an illustrated map of the same. The garden covers an area of about one hectare ( $2\frac{1}{2}$  acres), fenced, with a centrally located observation house. It is especially adapted to experiments on a small scale. The different kinds of soil originating from the different mountain formations peculiar to Switzerland are to be found there, such as slate of the Canton Graubunden, gneiss, flysch, verrucano, chalk stone, stone sand, and lime of the Jura, to be analyzed to determine their influence on the growth of the different kinds of trees, etc. Then follows the report of Dr. Stebler and Professor Schroeter on experiments made in the cultivation of wood, meadow, and grass lands, with a mixture of seeds on different kinds of soils and stations. Further, I find chemical examinations of pine trees of different ages and from different seasons, by Dr. Grete; seed experiments by Prof. Dr. Buehler (amount of seed, means of covering, depth of covering, size of the grains of wood, and varieties of wood); examinations as to the exact measure of the superficial areas, by Assistant Flury; examinations of Swiss tanning barks, by Dr. Grete.

The last report contains the interesting communication that the Canton of Tessin can furnish oak bark, the quality of which may be classed among the best tanning barks known to commerce. The average percentage of tannin contained in tanning barks known to commerce, being 7.45 per cent, and in view of the great scarcity of 10 per cent barks, the percentage found in the bark of the Canton Tessin (8 to 9 per cent) is very favorable, and should command the attention of the foresters in that canton, and encourage cultivation.

A further report shows that the Canton of Aargau possesses, since 1878, seven experimental forestry stations, and gives the results there obtained. These stations are located in forests, and have been selected at points of different ages, and possess different kinds of wood. They are measured at short intervals as to the quantity of wood, and thus show exactly the growth the trees are making. The head forester of Canton Aargau has, by twenty years, anticipated the work of the federal central station and furnished the same with valuable information regarding materials and actual results.



I may here add that the central experiment station has extended its branch experimental stations all over Switzerland, these numbering at present three hundred and thirty-seven.

In the meteorological appendix of the first volume, there is a description of the meteorological forestry stations on the Adlisberg and at the Haidenhäus, near Steckborn, Canton Thurgau; further, a table of observations made in 1889 and 1890; and, lastly, the results of observations made by the meteorological stations of the Canton Berne, established for forestry purposes, and compiled by Assistant Zschokke. These observations began on January 1, 1869, and continued uninterruptedly until December, 1887. This is a long period for study, and the results shown should be of interest to all foresters. The following points are worthy of mention:

(1) The temperature in the forests, monthly and yearly average, excepting winter months, is below the temperature on open land, measured at the same height, *i. e.*, 3 meters (9.84 feet), above the soil.

(2) The difference is greater at 4 p. m. (about the time of the daily maximum) than at 9 a. m.

(3) The difference increases with the greater annual heat, so that it reaches its maximum in July, always beginning to rise in the spring, and decreasing again toward autumn.

(4) In winter, the forest temperature is about the same as it is in the open field, but is inclined to be somewhat warmer.

(5) The pine forests near Berne and the larch forest near Interlaken seem to keep the air cooler, *i. e.*, protect the air more from heat than the beech forests do near Porrentruy.

(6) At 4 p. m., the tree crowns are warmer in spring, summer, and autumn, and in winter about as cold as the trunk at 1.3 meters above ground.

(7) The larch trees show the greatest divergence between the temperature of the trunk and the crown in a yearly average, as well as in the average of summer months; then come the pine trees, and, next, the beeches.

(8) During the months from October to March, the temperature of the soil increases with the depth, while it decreases from April to September.

(9) In the yearly average, the surface of the soil is warmest. Downward, the temperature decreases to a depth of 0.6 or 0.9 meter, where the temperature again begins to rise.

(10) The daily oscillations of temperature are not felt at a greater depth than 0.3 meter (about 1 foot).

(11) The surface of the soil is warmer in summer, and in winter it is cooler, than the air; in the forests, however, the surface of the soil is always cooler than the air.

The second volume begins with "examinations made by Assistant Henne on the growth of young pine, fir, and larch trees on different soils, expositions, and inclinations." Assistant Flury writes on examinations of the specific weight of brushwood newly cut (for the purpose of obtaining an exact figure in the yield of the forests); further on, the proportions between brush and

trunk wood; the rounding off of the diameter in making measurements; and, lastly, on the exactness of the measurement of felled trunks, taking the length and the average thickness as a basis. Professor Buehler continues his communications on seed experiments, and adds a report on "the precipitation in forests." Switzerland has many stations for the gauging of rain, but up to late years, none of them were established in forests. Now, however, these are to be found there for ascertaining how much of the rain is retained by the tree tops. This is of great importance to forestry and to water courses, and the results obtained up to date demonstrate that the annual quantity of rain measured within and without the forests is almost the same, there being but a trifling difference. There is no perceptible increase of quantity in forests. On certain days, a greater difference in the volume of the precipitation has been observed. During heavy rains, they amount to 13 per cent, while in light rains they may differ 50 to 100 per cent. In a thick pine forest, 40 to 80 years old, only about 55 to 60 per cent of the precipitation measured in the open field fell to the soil. The age of forests has had no apparent influence. In beech forests, however, the age of the trees manifests great influence. In a beech forest 20 years old, almost the whole of the precipitation reaches the soil, while the quantity measured below the crown in 50 to 90 years' old beech forests is only about 75 to 80 per cent. It will be seen that, on the yearly average, the crowns of pine trees retain 40 to 45 per cent, and those of beeches 20 to 25 per cent of the rain. Then come, by the same author, "Experiments on the sprouting qualities of plants before their planting; examinations as to the cleanliness and regularity of branches; the works of the central experimental station for forestry during the years 1891 and 1892," and, lastly, the "Observations made in the meteorological forestry stations during 1891" in tabulated form.

The third volume begins with an elaborate article on the important department of "Experiments in thinning out," accompanied by three tables showing the curves, one of these being illustrated with colored plates. This technical question may not interest the nonexpert, but it is of great importance to the forester, the forest owners, and authorities. It may be said that the Swiss central forestry experimental station plays an important rôle in the solution of this all-important question, which for about a century has been agitating European foresters. All these three hundred and thirty-seven experimental stations are mediums to solve this question, and if final results can be obtained, even in the remote future, they will be of great importance and value. Most of the articles in the third volume are of interest only to experts in this line.

Of general interest, however, will be the dissertation on "Temperature of the upper strata of the different kinds of soil," by Henne. In the experimental garden on the Adlisberg, near Zurich, the following kinds of soil are to be found: Verrucano, slate of the Canton of Graubünden, humus, Jura chalk, flysch, gneiss, stone sand, clay, lime, etc., all having been placed there in the same condition as found in their original homes. The

fact that snow does not melt in the same space of time on the different kinds of soils in the same locality, has induced the station to make experiments which are of importance, helping to understand the conditions of vegetation in general, as well as of practical value in solving the question whether trees should be planted or sown. The temperature of the different kinds of soil, as per average time of growth, *i. e.*, during seven months from April to October, was as follows in 1892:

Soils.	Centigrade.	Fahrenheit.	Color.
	<i>Degrees.</i>	<i>Degrees.</i>	
Verrucano.....	16.8	62.3	Red.
Graubuenden slate.....	16.8	62.3	Black.
Flysch.....	16.8	62.3	White gray.
Gneiss.....	16.2	61.2	Yellow gray.
Humus.....	15.9	60.6	Black.
Jura chalk.....	15.9	60.6	Yellow.
Stone sand.....	15.7	60.3	Gray.
Clay.....	15.4	59.9	Dark gray.
Limestone.....	15.4	59.9	Gray.
Temperature of the air.....	14.2	57.7	

The rotation in the kinds of soils, as regards their temperature, is not the same during the entire observation period, but the changes are not important. Verrucano, Graubuenden slate, and flysch possess the highest temperature in almost every month, while, on the other hand, clay shows generally the lowest temperature. The greatest differences in the temperature of the soils are observed at 10 a. m. and 1 and 4 p. m. The average difference in the months from April to October is  $1.4^{\circ}$ . The average in the month of June shows a difference of  $4.4^{\circ}$ . On sunny days, it increases at times at 1 o'clock to  $8.3^{\circ}$ . On dark days, it falls sometimes below  $1^{\circ}$ . The temperature of the different kinds of soil is mostly higher than the temperature of the atmosphere in the shade. On damp soil, no influence of the color of the soil on its temperature can be found.

The above shows how this young but promising institution is working. I am convinced that every attempt tending to call the attention of the public to forestry, must effect good influences. Forestry in mountainous countries can only be improved and brought to a high perfection if the entire population understands the important questions that are still to be solved. It is, therefore, to be hoped that the time will soon come when mountaineers and farmers will recognize forest officials as useful counselors.

EUGENE GERMAIN,

*Consul.*

ZURICH, September 8, 1894.

# SWISS MARKET FOR AMERICAN WOODS.

In looking over the Swiss custom-house statistics, I find that, although most of the cantons of this mountainous country have extensive and fine forests, they are not sufficient to supply Switzerland with the necessary timber and lumber. In fact, this country imported last year (1893) 18,200,099 francs (\$3,502,619) of wood and manufactures of wood, while the exports of the same amounted only to about 4,000,000 francs (\$772,000), showing a surplus of imports over exports of over 14,000,000 francs (\$2,762,000), in which amount the United States participated only with 189,679 francs (\$36,608).

It is evident that the United States could secure a greater share of this Swiss trade, and in order to find out how the Swiss markets could be extended to our products in this line I addressed communications to some of the interested parties, viz, dealers and importers in wood and manufacturers of boats, carriages, furniture, etc., housebuilders, etc., asking their opinion. I now beg to submit, for the benefit of our people in that line of trade, what parties here say regarding the kinds of wood required, prices, etc. I also add a tabulated statement showing the total Swiss imports during 1893 of the different kinds of lumber, timber, etc., compared with the imports from the United States during the same period, the principal sources of supply, and customs duties.

*Imports of wood and manufactures of wood into Switzerland during the year ending December 31, 1893.*

Articles.	Total imports.	Imports from United States.	Principal countries of supply.	Customs duty per 100 kilograms.*
	<i>Francs.†</i>	<i>Francs.†</i>		<i>Francs.†</i>
Firewood:				
Hard.....	1,811,553		Germany.....	0.02
Soft.....	1,110,327		do.....	.02
Turf.....	381,293		Germany and Netherlands.	.02
Tanning bark.....	992,039		France.....	.02
Charcoal.....	626,586		Germany.....	.10
Timber, rough, or cut with the ax:				
Hard.....	494,946	9,792	do.....	.15
Soft.....	1,094,369	18,872	Germany and Austria...	.15
Staves, rough.....	413,694		Austria.....	.15
Other oak wood, cut in longitudinal section, except veneers.....	1,303,296	320	Germany, Austria, France, and Italy.	.40
Lumber (boards, laths, and shingles):				
Hard.....	304,342	9,120	Germany and Austria...	.70
Soft.....	3,185,514	41,240	Austria.....	.70
Beams and railway ties other than oak.....	336,434	5,229	Germany.....	.70
Cabinet wood:				
Rough.....	100,615	5,900	Central America.....	.10
Sawn, except veneers.....	85,085	53,240	United States.....	.50
Veneers:				
Common wood (not exotic).....	181,150	2,800	Germany.....	2.50
Cabinet wood.....	33,250	500	France.....	5.00

\* 100 kilograms = 220.46 pounds.

† 1 franc = 19.3 cents.

*Imports of wood and manufactures of wood into Switzerland, etc.—Continued.*

Articles.	Total imports.	Imported from United States.	Principal countries of supply.	Customs duty per 100 kilograms.*
Cork wood:	<i>Francs.†</i>	<i>Francs.†</i>		<i>Francs.†</i>
Rough.....	71,270		Italy.....	0.50
Manufactured.....	415,200		France and Spain.....	5.00
Hogsheads, etc., of soft wood.....	114,896	1,001	Germany.....	1.60
Used petroleum barrels.....	57,880	520	France.....	1.00
Manufactures of wood:				
Planed, but not finished.....	234,892	868	Germany.....	3.00
Finished, but not painted or carved, and without metal.....	206,580	20,900	do.....	6.00
Rough, but with metal.....	58,170	1,080	Germany and France....	12.00
Parquetry:				
Finished.....	25,740		Austria.....	6.00
Unfinished.....	192,630		do.....	3.00
Cooper ware (including staves, finished)....	195,650		Germany.....	12.00
Furniture and parts of furniture:				
Common wood—				
Rough.....	495,830	2,970	Germany and France ...	10.00
Bent, not upholstered.....	259,875	1,080	Austria.....	12.00
Painted, varnished, or veneered....	248,930	2,700	Germany.....	16.00
Polished.....	647,400	1,750	do.....	25.00
Carved, upholstered, etc.....	470,250	5,500	Germany, France, and Italy.	38.00
Cabinet wood (exotic).....	82,880		France.....	50.00
Other manufactures of wood:				
Painted, polished, varnished, etc.....	293,975	825	Germany.....	30.00
Moldings, ornamented.....	145,670		do.....	30.00
Picture frames, etc., ornamented.....	280,686	1,872	do.....	40.00
Baskets, etc.—				
Rough.....	127,320		Germany and France....	12.00
Fine.....	251,275		Germany.....	30.00
Brushes, etc.—				
Rough.....	201,000		do.....	25.00
Fine.....	199,200	1,600	Germany and France....	50.00
Other articles.....	448,407			
Total.....	18,200,099	189,679		
Total, United States currency.....	\$3,502,619	\$36,608		

\* 100 kilograms=220.46 pounds.

† 1 franc=19.3 cents.

Duties are paid on the gross weight.

Switzerland's exports of wood and manufactures thereof amount to 4,126,826 francs (\$796,477), of which amount the United States had 49,676 francs (\$9,587), mostly consisting of wood carvings.

## SHIPBUILDING.

The manager of the Maschinenfabriken von Escher Wyss & Co., Zurich, a world-renowned concern for machinery of all kinds, shipbuilding, etc., writes:

We use teak, pitch pine, and yellow pine. The requirements for teak wood are limited, and would hardly offer inducements for direct imports, but of yellow and pitch pine we consume several carloads at a time. We are buying these goods in boards, laths, or square-cut blocks, the latter of which we cut ourselves according to requirements.

Regarding American woods, we do not purchase same on account of the low figures, but for their superior qualities. Yellow and pitch pine are mostly used for ship deck laths; some little also for cabinetmakers' work. The price of pitch pine is rather lower than that of the native larch wood; the same contains more pitch, and can be bought in long, clean blocks, but is not so fine as the former.

We are buying these woods at Genoa, Antwerp, or Hamburg. We could only make direct importations if small shipments could be forwarded at as cheap freight rates as large ones, and prices made delivered, at our railway station, subject to inspection, as we must be very particular about the quality, and it would not pay us to send some one to the United States to buy and inspect these woods before shipment.

Messrs. Treichler & Co., Zurich, boat builders, another prominent firm, write:

At our wharf we are using the following kinds of wood: Mahogany, Spanish cedar, cypress, pitch pine, yellow pine, white pine, Canadian spruce, and teak from the West Indies.

For yacht building in England, yellow pine is mostly used (planks and laths), it being lighter than pitch pine. The price of pitch or yellow pine should not exceed 200 francs per cubic meter (\$40 per 1.308 cubic yards), delivered at Zurich. The quality should be an excellent one, as, for boat building, only wood free of knots and in every way faultless can be used. In order to reduce the freight charges, the woods should be delivered in planks 6 to 10 meters long (one meter=39 inches), with a minimum width of 0.35 meter, and from 60 to 150 millimeters thick, or in logs or blocks of as great dimensions as possible, and ax cut.

An excellent wood for the manufacture of small boats is known in America under the name of "white cedar," and is used there in great quantities. We take a special interest in this kind of wood, which up to date is being furnished us by Hamburg and Bremen importers.

It is getting more difficult from year to year to find selected fine woods in Switzerland; other industries besides ours (such as are compelled to use fine, clear, and durable woods) will be compelled to use more American woods. There is no market for second qualities, parcels of which have from time to time been brought over.

Messrs. Treichler & Co. are willing to undertake the sale, on commission, of yellow and pitch pine, white cedar, and Canadian spruce, if American wood exporters would make trial shipments to Switzerland, and they can at any time furnish satisfactory references.

#### WAGONS AND CARRIAGES.

Mr. J. C. Geissberger, Zurich, carriage manufacturer, writes:

American woods for the manufacture of carriages have for years been imported into Switzerland, but in an indirect way only, through Berlin, Hamburg, and English commission houses.

This has reference to hickory woods required in the manufacture of wheels, as hubs, spokes, and fellies. The hubs are imported either in a rough state or finished; the spokes are imported ready for use, and so are the fellies (finished, bent, and assorted in sizes to meet requirements).

For the other parts of our carriage manufactures, we also use walnut, acajou, and white-wood, in boards of 10 millimeters (0.3937 inch) thickness.

As to prices, we have to pay the following figures, delivered: Hubs, in the rough, made of American rock elm (sets of four), 9.40 francs (\$1.81). Prime hickory spokes, 1  $\frac{3}{8}$  inches, 40 francs (\$7.72) per hundred; 1  $\frac{1}{2}$  inches, 42.50 francs (\$8.20) per hundred; 1  $\frac{5}{8}$  inches, 45 francs (\$8.69) per hundred; 1  $\frac{3}{4}$  inches, 47.50 francs (\$9.17) per hundred. Prime

hickory fellies, bent, 38 to 50 millimeters (1.5 to 1.97 inches) thick and 90 to 95 centimeters (35.43 to 37.4 inches) high (set of four), 13 to 15 francs (\$2.51 to \$2.90); 38 to 50 millimeters thick and 110 to 140 centimeters (43.31 to 55.12 inches) high (set of four), 15.65 to 19.40 francs (\$3.02 to \$3.74). Walnut planks, 3.60 to 4.80 francs (69 to 93 cents) per square meter (10.7642 square feet); accajou planks, 6 to 10 francs (\$1.16 to \$1.93) per square meter; white wood, about 2.25 francs (43½ cents)—all delivered free on board at Zurich and duty paid.

Mr. Geissberger is ready to import direct from America, if prices and terms are made satisfactory.

#### WOOD MATERIALS FOR FLOURING MILLS.

Mr. A. Millot, Zurich, writes that his requirements demand almost exclusively pine and beech woods, and these he uses in considerable quantities, other kinds of woods not being used to a large extent. Pine boards cost here 55 to 60 francs (\$10.61 to \$11.58) per cubic meter, and beech boards 75 francs (\$14.48) per cubic meter.

#### LUMBER DEALERS.

Messrs. R. Gintzburger & Co., Romanshorn, write:

We have imported Florida pitch pine in an indirect way; we are, however, ready to make direct imports if prices are satisfactory. We can handle a shipload at any one time. The woods mostly required are red and white pine of first quality in boards of 5 to 6 inches in width by one inch thick; also in larger dimensions. We are also buyers of other varieties of wood.

Mr. Gottfried Baumann, Zurich, writes:

As far as I know, the consumption of American woods here is restricted to walnut, mahogany, palissander, and pitch pine. The latter has been brought in direct of late in the shape of lumber. I hardly think that American wood could be imported with profit for building purposes, because native timber, sawed with angular edges, is sold at Zurich at about 37 to 40 francs (\$7.14 to \$7.72) per cubic meter (35.316 cubic feet). Something might be done in American oak, but only in thick planks of first quality, at about 75 to 80 francs (\$14.48 to \$15.44), delivered at Zurich. Large quantities of this article are being imported from Hungary.

Special attention is called to the communication of Messrs. Gebrueder Maser, at Winterthur, a large lumber firm making direct imports of American pitch pine, etc. They write as follows:

It is our opinion that American wood exporters could largely increase their sales in Switzerland, especially if they would offer such varieties of wood as can be brought into competition with the native woods. As long as American exporters seek a market for expensive woods only, no satisfactory results are obtainable, even if the quality is superior to that of the native woods. The wood trade of this country demands a great deal of the cheaper varieties.

The only American wood generally known here is the pitch pine, and we dare say that the increase in the imports of this wood is due to the efforts of our firm, made for years past in this direction. Unfortunately, prices are always much higher than those for similar native woods, and, for this reason, their use is limited. In some cases, pitch pine is preferred on account of its suitable dimensions, or where wood containing a great deal of pitch is required for special purposes. This wood will always find a good sale for parquet floors, but only in the better qualities, and if prices could be lowered a little the sales could be much increased.

Second qualities, as have sometimes been sent here, are not wanted, and it is in the interest of American exporters to ship only first qualities if they want to increase the demand.

Other American woods can be used, provided the qualities are as good and prices not higher than that of woods most in use here.

Switzerland imports great quantities of oak boards from the most remote sections of Hungary, etc., unfinished parquetry especially. The freight charges on these shipments are just about double the freight charges from America to Switzerland, when sent in shiploads. If, therefore, the American oak wood can be used for parquet flooring, as we suppose must be the case, and the raw product can be bought as cheap in the United States as in Hungary and Russia, the American product, no doubt, will find ready sale in large quantities.

The native beech is also much used for parquetry, being as durable as oak and one-third cheaper. If America furnishes a wood similar to our beech, which is very hard, sales would be still more extensive than in oak wood.

As to dimensions and quality of oak and beech friezes, they should be as follows: Thickness, 27 millimeters (1.06 inches), with at least 1 to 2 millimeters surplus measure; length, mostly 60 centimeters (23.6 inches), or between 50 to 70 centimeters (19.7 to 27½ inches), with 3 to 5 centimeters surplus measure; width, mostly 12 centimeters (4.7 inches), or between 11 to 12 centimeters, with 3 to 5 millimeters surplus measure. The quality required is the perfectly air dried, clear of knots and spots, and of even color. The cuts must, of course, be strictly parallel. As to prices, oak friezes will command about 40 to 50 per cent more, and beech friezes 30 to 40 per cent less than pitch-pine flooring, delivered, freight and duty paid, in Switzerland.

There is also some demand for a cheap soft wood for flooring, which must also be perfectly free of knots, at a price not to exceed the price of first-class quality of native pine, which is sold about two-fifths cheaper than pitch pine.

I would suggest that American exporters address Messrs. Gebrueder Masera, this firm being the largest of Swiss wood importers. They are ready and willing to give any information desired regarding their own requirements, or on other woods needed here as lumber, for the manufacture of tables and chairs, box lumber, staves for hogsheads, etc.

#### STAVES.

Statistics show that Switzerland imports annually about 600,000 francs (\$115,800) worth of rough staves and finished cooper articles. The staves most in demand are of the smaller sizes, varying from 34 to 75 centimeters (13 to 29 inches) in length. Hungary supplies most of them. These staves are split and trimmed with the ax, and not sawed; they vary in width from 4 to 11 inches.

W. Weiss, Thalacker, Zurich, is the principal stave importer in this district.

#### RAILROADS AND STREET PAVING.

For railroad building, wooden ties are gradually being replaced by iron ties, the latter being cheap and more durable.

Swiss cities have begun to pave their streets with wooden blocks, and, if results prove satisfactory, the use of wooden paving blocks will be increased.

#### HOUSE FINISHINGS.

During the two years 1893-94, not less than eleven hundred and eighty new houses have been erected in the city of Zurich alone, and although



not much timber is used, stone and iron being the principal materials, a large quantity of wood is worked up for finishing purposes, as for instance, for parquet flooring, sashes, window frames, stairs, etc.

Parquet floors are very extensively used in this country, such being found in almost every house in Swiss cities. There are quite a number of factories in Switzerland that make parquet flooring a specialty for home as well as for export requirements.

Messrs. Haldimann, Wissler & Co., Goldbach, Canton Berne, write:

We think that in a few years, some of the American woods will play an important rôle in the Swiss markets. So far, the Swiss parquetry factories have been getting their supplies from Hungary, mostly, however, through Genoa, Antwerp, or Hamburg commission houses.

Pitch pine, cut in longitudinal sections (long friezes) sells in sizes of 25 to 33 millimeters thick at 90 to 95 francs per cubic meter (\$18 per 1.308 cubic yards) delivered free on board track at Swiss stations.

Some American oak is also imported from time to time. If American exporters are desirous of competing with the Hungarian oak, they must sell the Swiss parquetry factories friezes, 25 to 33 millimeters (0.98 inch to 1.3 inches) thick, and 30 centimeters to 2 meters (11.8 to 78.4 inches) and more in length, at a price not to exceed 100 to 155 francs (\$19.30 to \$29.91) per cubic meter, according to quality and dimensions, delivered and duty paid.

Other American woods, such as mahogany, hickory, walnut, etc., are imported for the manufacture of furniture.

Mr. Ferdinand Haldimann is the president of the Swiss association of parquetry manufacturers, and this gentleman is willing to give interested parties all the necessary information, with a view to enter into direct trade relations, especially in the line of oak friezes, samples of which he solicits.

#### CABINET WOOD FOR FURNITURE FACTORIES.

Messrs. Wolff & Aschbacher, furniture makers of Zurich, write:

American woods mostly imported into Switzerland are walnut, oak, palissander, mahogany, rosewood, etc., all being delivered in the shape of logs, lumber, or planks with angular edges.

We are aware that there are still a number of other American woods fit for the manufacture of furniture, and up to the present time not imported, but are said to be rather cheap—that is to say, they are sold at about the same prices which we have to pay here for our native woods, namely, 130 to 220 francs (\$25.09 to \$42.40).

It would be well for exporters to send samples of furniture panels with crossettes, the panels to be about 15 centimeters in width to 20 centimeters in length (5.9 to 7.9 inches). This would give us an idea whether they would answer our purposes. We do not import direct, our requirements in American woods being small, but we purchase as needed from importers.

Another firm says that unfinished furniture, as frames, etc., in the rough might be imported to advantage, and asks for catalogues of such material.

Regarding household and office furniture of American make, the transportation expenses and customs duties are against us, yet something might be done in the line of fine furniture, which, as a rule, was for years imported to this district from Paris, but owing to the prohibitory tariff now being imposed on goods of French origin, the imports of such articles are restricted, and I am confident that business could be worked up with the American article.

From some of these communications, it may be readily seen that more American woods are imported into this country than appears from the statistics, the bulk being bought from German or English importers; but if American exporters would make an effort to establish direct relations with dealers and large consumers here, they would not only save commissions, but no doubt largely increase sales.

It would be well to mention to American exporters that goods sent to Switzerland must be accompanied by a certificate of origin, and that the customs duties, which are specific, are collected invariably on the gross weight.

EUGENE GERMAIN,

ZURICH, *January 11, 1895.*

*Consul.*

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#### SUPPLEMENTARY REPORT.

While gathering the necessary information on American woods in Switzerland, I entered into correspondence with several Swiss firms working up American and other woods, and incorporated a synopsis of answers received in my report. To-day, I am in receipt of a communication from the Swiss furniture firm of Meyer-Mueller & Co., Winterthur and Zurich, which reached me after my report had gone forward. This firm being a prominent concern, I give a translation of their letter:

Answering yours of January 5, we beg to inform you that, up to date, to our knowledge, no ready-made American furniture has been introduced into Switzerland, but we are of opinion that unfinished American furniture in the rough (in pieces) could be introduced to advantage.

We have seen several Swiss furniture manufacturers who visited the World's Fair at Chicago, and from these we learn that American furniture manufacturers sell unfinished furniture and ship it knocked down. We think such furniture would find a ready market in this country, and could be finished in Switzerland to suit the tastes, as to color and finish, of the Swiss people.

We would therefore thank you to put us in communication with one or two first-class American furniture factories, with a view of making arrangements to try the venture and get a trial shipment.

The kind we manufacture are parlor, sitting-room and bedroom, and office furniture. As to our responsibility, we refer you to the Zuercher Bankverein, Zuerich, and the bank in Winterthur.

EUGENE GERMAIN,

ZURICH, *February 1, 1895.*

*Consul.*

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#### SWISS MARKET FOR AMERICAN TOOLS.

American wood-working machinery and tools can, I think, be introduced into Switzerland. Furniture, wagon, and carriage manufacturers are still using old methods to cut, carve, or bend what wood they work up for their requirements. If a good, expert agent, able to speak French and German,

were sent out to visit the different manufactories and shops of the country, he could, I am sure, secure large orders. Care should be taken, however, to have all such machinery and tools patented in Switzerland, as well as in Germany, to prevent imitations being manufactured from the first models sent out, for it is a well-known fact that German manufacturers make it a practice to imitate our machines and tools and then cut under our prices.

Mr. J. Geissberger, a carriage manufacturer of this city, desirous of enlarging his plant, requested me to supply him with the addresses of American wood-working machinery factories. I gave him such addresses as I could obtain. He corresponded with several firms, obtained catalogues and price lists, and he now informs me that he is getting ready to order about 25,000 francs' (\$5,000) worth of machinery from one of two firms in Ohio. He has written for further particulars, requesting, among other things, plans and specifications as to how to set up and place such machinery to advantage, after the receipt of which, he says, he will no doubt order.

A wagon manufacturer of Burlington, Iowa, visited this city last summer and on his rounds dropped into Mr. Geissberger's shops. He succeeded in selling him about \$100 worth of wagon and carriage wheels to be shipped upon his return home. Mr. Geissberger received this trial shipment lately and is highly pleased with the goods as to workmanship, quality, and price, the cost laid down here being much less than Mr. Geissberger could manufacture them himself.

It must be remembered that, if shipped in large quantities, much lower freight rates could be obtained, and goods could be laid down at a lower figure than this first trial shipment has cost.

I merely mention this transaction to demonstrate that wood-working, time-saving machinery, in the manufacture of which the United States excel all other nations, will be wanted in Switzerland as soon as people are educated to its use, for they much prefer to manufacture their own wheels, furniture, etc., than to import these articles ready-made, if by securing and working the proper machinery, they can, with cheaper labor and longer hours than we have, manufacture for themselves and save money.

Now, Mr. Geissberger is but one in a country with 3,500,000 people, among whom are many manufacturers who would gladly avail themselves of time-saving machinery, if they only knew where to get it and how to work it. I have an idea that our wood-working machinery manufacturers would not only find a good field to operate in here, but also that Germany, England, France, Austria-Hungary, and Italy would also be good ground to canvass.

EUGENE GERMAIN,

*Consul.*

ZURICH, *February 28, 1895.*

### SWITZERLAND'S BUILDING-MATERIAL STATION.\*

The federal institution for the testing of building materials is placed under the direct supervision of the federal school board, which is continually kept *au courant* of the management, the requirements and the results of examinations made at the station by a special commission selected from among the school board. A technologist, appointed by the federal council upon the recommendation of the school board, is charged with the superintendence of the station, and he performs the respective tests with the assistance of the necessary permanently employed force.

The object of the institution is to ascertain the general utility of building materials, especially as to their cohesive power, in compliance with requests made by private parties or authorities; in addition thereto, it makes, of its own accord, tests and examinations of the same nature, which, in a general scientific and economic way, are of public interest.

In this institution, every kind of building and construction materials are tested, but particularly, natural and artificial building stones, cements, timbers, metals, hemp and wire cables, chains, and driving belts, as well as completed constructions—parts of machinery or bridges—to ascertain the quality of materials, their elasticity, and absolute strength. The station furnishes also chemical analyses of all these materials.

Requisitions from private parties, or from authorities desiring building materials tested and examined, are to be addressed in writing to the superintendent of the station. The latter shall immediately respond to the party making the request and execute orders as promptly as possible, according to the date on which the request was received. Should the employees or the machinery of the institution be overtaxed with work and the execution of an order require a period exceeding four weeks, the parties interested shall be so notified. The materials to be tested must be delivered to the station free of all charges. Expenses resulting from improper preparation or damages to materials while in transit are in all cases to be borne by the owners. The station provides the necessary tools, implements, etc., free of all charges, except the apparatus which may be necessary for testing exceptional materials, which are only rarely called for. In such case, the party in interest must pay whatever extra outlays are required. If such special apparatus can, thereafter, be of use to the station, the latter may pay part of the expenses, which, however, are not to exceed 50 per cent of the original cost, and it must then become the property of the station. The fee for any test has to be paid in advance. In case the fee has not been previously fixed, an approximate amount must be paid, and, whatever the balance, it can be settled after the test is made. To annual subscribers, a lower fee is charged.

The results of all the tests made are recorded, and a copy of the record, in the form of a certificate, is given to the patrons. This certificate must only

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\* A branch attached to the Federal Polytechnic School at Zurich.

state the results of the test, without mention of the purposes the material in question is to be used for. The superintendent is not allowed to give any verbal or written information regarding the tests to outsiders, unless he is specially authorized to do so by the party in interest. Results of tests will, however, be published in the general reports of the station, if the interested party does not object thereto within four weeks after the receipt of his certificate.

The superintendent of the institution is in duty bound to make full annual reports to the school board relative to the work done and the results obtained by the station. He shall also, from time to time, publish special reports on the results of special interest, defining the same as "reports of the building material control station of Switzerland at the Federal Polytechnic School, Zurich."

The tests of building timbers are:

(1) *Complete examination*.—Indication of run of fibers, number and condition of knots in longitudinal cuts, determination of the average width of the annual layers, and of the modification in the width of the annual layers in a latitudinal direction of the structure; composition of the lineal layers, as well as the average proportion between spring and fall woods; determination of the degree of moisture, the density at the time of delivery and after being subjected to a temperature of 105° Celsius, the unit volume weight; determination of elasticity and resistance to traction and to compression, to trimming, and to flexion; construction of the diagram of the resistance to flexion, and of the flexion work corresponding with the characteristic modification of the substance. The quantity of material and the kind of preparation necessary for the trial pieces are prescribed in special regulations. The fee for one examination is 200 francs (\$38.60).

(2) *Restricted quality examination*.—Determination of resistance to compression and flexion, construction of the working diagram of resistance to flexion. The material required for examination are three prisms, with sharp angular edges and planed surfaces, 12 by 12 centimeters (4.72 inches), in sections of 160 centimeters (63 inches) in length. The fee for one examination is 60 francs (\$11.50); the subscription fee for five examinations is 180 francs (\$34.74).

(3) *Special examinations according to agreement made in each case*.—Each shipment of wood should as nearly as possible be accompanied by the following description: (a) An exact denomination of the kind of wood; (b) statement of the age and time of felling; (c) statement of origin and the condition of the land on which grown (if on south or north slopes, elevation above the sea, if from the interior of the forest or from the outside borders, etc.); (d) geological condition of the growing land (if moraine, sandstone, lime, argillaceous schist, or slate, etc.).

EUGENE GERMAIN,

*Consul.*

ZURICH, November 9, 1894.

## UNITED STATES TRADE WITH AMOY.

As will be seen by reference to the list herein inclosed of American goods usually kept in stock by the managers of several of the large establishments at this port, and dealt in quite extensively, the number is considerable; and as regards several items, the quantity used is large. This is especially true of kerosene and flour. I have heard complaints made that the wooden boxes wherein the tin receptacles of the kerosene are incased are sometimes so carelessly made as to furnish insufficient protection to the tin, thus leading to serious loss. If this cause of complaint is removed, there is no reason why this trade should fail to grow indefinitely, as natives and foreigners alike prefer the American oil.

The only obstacle to the increase of the quantity of Californian dairy products used here is the price. The 90 cents per pound for the Californian butter, while possibly justified by its superiority over the Danish at 70 cents, has an evident tendency to limit its use. It rests then with the producers to say whether they can afford to lower their price so as to compete more successfully with their European rivals. The use of the imported butter, American and European, is restricted almost wholly to foreign residents.

Recently, at the request of certain exporters of San Francisco, I placed them in correspondence with some of the dealers here, and have some reason to hope that an increased trade may soon result. But it must be borne in mind that the direct importations at this port bear only a very small proportion to the quantities of the various sorts of American products used here, the bulk of such trade being conducted through Hongkong, the terminal port of the Pacific Mail and the Occidental and Oriental steamship lines from San Francisco, where their cargoes are entered, and whence the merchants here obtain what they need by the several coastwise steamers plying between the two ports.

The following articles are imported into Amoy from the United States: Best flour, crackers (water and assorted), condensed milk, cheese, canned preserved fruits and meats, dried and fresh apples, hams and bacon, codfish, smoked salmon, butter, lunch ham, ham sausages, pigs' feet, ox and sheeps' tongues, pure lard, comb honey, claret, potatoes, oatmeal, cracked wheat, tomatoes, carrots, baking powder, beans and pease, raisins and currants, cigarettes, florida water, hops, lobsters, pearl barley, mackerel, prunes, family pork and beef in kegs, herrings, sugar corn, and assorted nuts.

DEL. KEMPER,

*Consul.*

*AMOY, November 15, 1894.*

## INDUSTRIES OF LUXEMBURG.

## IRON AND STEEL.

The number of mines in the Grand Duchy of Luxemburg in 1893 was 57; total production, 3,351,938 tons; value of ore, \$1,559,569.60; number of workmen, 4,054.

Number of blast furnaces, 23; number in operation, 22; total number of weeks in operation, 965; production—forge pig, 122,679.50 tons; steel pig (Thomas), 348,242.50 tons; foundry pig, 87,367 tons; total, 558,289 tons; value, \$4,809,386; number of workmen, 1,913.

Number of foundries (all in operation), 8; production, 7,764 tons; value, \$219,183; number of workmen, 270.

The production of steel works was 129,123 tons.

## TOBACCO.

There are in the Grand Duchy of Luxemburg 24 tobacco factories, employing 362 hands. German tobacco is largely used in these factories. The wages varied in 1893 between 55 and 75 cents per day for adults, cigar makers earning from 80 cents to \$1, and children from 15 to 35 cents.

The factories pay annually in salaries and wages about 250,000 francs (\$50,000); about \$140 per employee, on an average.

In 1893 they produced, in round numbers, 20,000 quintals of smoking tobacco, 1,000 quintals of snuff and chewing tobacco, 8,000,000 cigars (at \$8 per 1,000), and 2,000,000 cigarettes (at \$2 per 1,000); total value, \$470,500.

## PRINTING.

The Grand Duchy of Luxemburg (area, 1,000 square miles; population, 211,000) possessed in the year 1893 twenty-one printing establishments, eleven of these being in the town of Luxemburg (population, 19,000).

The number of persons employed in this industry was 177, as follows: compositors, 89; printers, 18; apprentices, 24; and laborers, 49. Wages varied from 70 cents to 90 cents per day. There were in use 13 hand and 27 mechanical presses, 18 of the latter being steam presses.

There were in the country in 1893 two lithographic establishments and ten bookstores.

The bookbinderies employed 28 to 30 hands, each of whom earned between 50 and 60 cents a day.

## TANNING.

The condition of business in the Luxemburg tanning industry was far from satisfactory in 1893. The following table shows (1) the price of La

Plata hides, with hair, at Antwerp and Havre; (2) the price of Luxemburg tan bark; (3) average wages; and (4) the price of tanned hides:

Year.	Price of hides, Plata saladeros, beef, 20 to 32 kilograms, per 50 kilograms (110 pounds), with hair.	Price of tan per bundle of 25 kilograms (55 pounds).	Average daily wages.	Price of hides, Plata saladeros, beef, per 50 kilograms (110 pounds), tanned.
1853.....	\$11.24	\$0.43 to \$0.48	\$0.15 to \$0.18	\$24.85 to \$26.54
1863.....	12.16	.77 to .87	.19 to .26	30.16 to 37.39
1873.....	16.21	.87 to .97	.29 to .34	38.60 to 44.63
1883.....	15.15	.83 to .93	.34 to .39	36.91 to 42.94
1893.....	9.65	.53 to .63	.34 to .48	25.57 to 35.22

From 1853 to 1865, the sale of waste materials (hair, scraps, horns, etc.), produced a sum almost large enough to pay the wages of all employees. Between 1865 and 1885, however, prices fell so much that many tanners found it more profitable to use these waste materials as manure. An idea of the extent of this fall in prices is given by the fact that in 1884 hide scraps brought \$14.48 per 100 kilograms, while to-day they are worth only \$3.62. In like manner, the value of raw hair fell from \$7.72 to \$2.90.

GEORGE H. MURPHY,  
*Vice-Commercial Agent.*

LUXEMBURG, *January 18, 1895.*

## BUSINESS DEPRESSION IN SMALL GERMAN CITIES.

The following is substantially a translation from the *Anzeiger*, of this city. It seems to me to set forth the views of the best observers and thinkers as to the relation of the prosperity of the farmer to the general weal, but most immediately to the prosperity of the smaller cities in farming districts:

How truly a state is an organism demonstrates itself whenever any important interest of a state suffers. There is at once declared a sort of constitutional sympathy; every other interest is, sooner or later, involved. A painful illustration is afforded in the depression of our agricultural industries that has now become so chronic. In this discussion, not less than 42 per cent of our population comes directly into consideration. It is at once obvious that a shrinkage in the consuming power of so large a body of buyers must be keenly felt somewhere in other circles.

The large cities, of course, are not exempt, but they suffer in a way that is less traceable to its ultimate cause. For the first and most clearly defined symptom of the abnormal state of things we must look to those circles which center around the farmer's barn and granary. This introduces us to the larger villages and smaller cities of our land. In these instances, the city population gives an altogether inadequate support to the tradespeople, mechanics, and men of the learned professions. They are there, not mainly with reference to the wants of the few thousands of their fellow villagers or city neighbors, but with reference to what the farmer wants, consumes, and can pay for. Quite as in the middle ages, these cities are practically the only organ of commercial communication between the farmer and the commercial and manufacturing world. To the dealer in the neighboring city the farmer sells his produce; from him he gets credit; he leaves with him what money he can put at interest; through him he sends out his orders for farm machinery, fertilizers, and the like. Furthermore, on market



days, whether he has or has not anything to put upon the market, he goes into town to see what is going on, and, perhaps only incidentally, makes purchases that tell decidedly, in the course of the year, upon the city's prosperity. To a degree not paralleled in the large cities, he contracts alliances with his factors and other shop people that become traditions of his and their families. If he is able to send his children away for a better education than they can get in the country school, it is to the nearest city, where he and they feel so much at home, that he sends them.

So many and so sensitive being the fibers which interlace these little communities and the cultivators of the soil around them, it is no wonder that the present crisis, that has almost paralyzed the energies of the latter, should have its coordinate symptoms among the former. Mechanics complain of the infrequency and scantiness of orders; even shoes and clothing seem to have ranged themselves among the dispensables of life—at any rate, to have taken to themselves a new lease of life, so as to require no recuperation. The merchant can give you all the evidence you can ask of the weakened consuming power of the surrounding country by just turning over before your eyes the pages of his ledger. In this regard there is no material difference between the large planters and the small farmers.

Under this pressure of straightened means among so large a body of the purchasers of our country, there has naturally arisen a modification of the nature of the demand made for supplies, as well as the amount. The main inquiry has come to be for the cheap as against the good. There is not always an ignoring of the fact that the low-priced is often in the end the dearest, often as this is, among ignorant buyers, the case; the fact is, the impoverished farmer, upon the hand-to-mouth principle to which he is practically forced, buys what he can raise the money to pay for, hoping the next time to be able to go further into quality and real value.

People brought to such a condition and to such a state of mind are the easy prey of all manner of swindles. Worthless goods are manufactured for a market where so unhealthy a demand is found; honest trade is crowded to the rear by methods of which the flaming advertisements of the day are sufficiently suggestive.

It need not be added that something must be done if our smaller cities are to survive, the rather in view of the powerful competition that, at the best, they have to encounter from their great, overgrown sisters.

EDWARD P. CRANE,

*Consult.*

HANOVER, *January 17, 1895.*

## THE LEIPSIK NEW YEAR'S FAIR IN DRESSED HIDES.\*

After the satisfactory fall trade, it was hoped that business would run as smoothly at the beginning of the new year. These hopes have only been partially realized. The supplies of under leather from the Rhine country and Hesse were exceptionally weak, and these small quantities changed hands at moderate prices. Really stout, first-class sole leathers were almost entirely absent; for the most part, they were only inferior lots, and prices ruled accordingly. Medium stout qualities of German sole leather were well represented, and there was a lively demand for the better qualities at corresponding prices. German and wild inner sole leathers were sold cheaply. Vache leather was also disposed of slowly at the previous very moderate quotations. There was also a brisk demand for thin, light, inner-sole kips of superior dressings.

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\* Extract from a Leipsic newspaper.

A number of small lots of seron leather were disposed of at moderate prices, varying with the cleanliness, quality, and good assortment. Patent leathers in brown, black, and orange dressings were neglected, and were only bought at reduced prices. Light, first-class qualities of light-brown upper leather were in demand at good prices, but heavy qualities were dull. The same may be said of brown and black kips. In brown dressing, the latter article was represented in considerable quantities, and the sale dragged somewhat. Horse leather in pieces and black shoe leather were quieter, owing to the season. Prices were firm. Brown and black calfskins showed no change. The market for sheep leather was well supplied, but a considerable portion consisted of very mixed lots of tawed and tanned skins which had to be sold at corresponding reductions. The quotations for regular first-class lots of tanned and tawed leather were approximately the same as at the last Michaelmas fair. The market was much duller for chamois sheepskins and chamois dressed deer and reindeer skins, for which there were no buyers, several lots remaining unsold.

The course of the New Year's leather fair may, in general, be said to have been normal, although the prices were, unhappily, not very satisfactory to the producers. Of the small buyers, only a few were present. A large number of leather-sellers' booths remained empty.

In the sole-leather branch, there was a sustained demand for quebracho-tanned leather, as this article was brought on the market good in substance and properly dried.

The exchange in connection with the leather fair was attended by more than three hundred persons.

The prices per pound obtained for parcels, according to their quality, assortment, dryness, etc., were approximately as follows:

Description.	Prices at fair for assortments.	Prices at exchange for approved, good, and best qualities.
German horse leather.....		\$0. 32 to \$0. 40½
Salted wild horse leather, best Holstein.....		. 50 to . 54½
Brown kips for boots, of about 5 to 7 pounds.....	\$0. 25 to \$0. 28½	. 35½ to . 40½
Brown kips for pattens.....	. 19 to . 21½	
Black kips, of about 4 pounds.....		. 29½ to . 32
Black kips, of about 6 pounds.....	. 23½ to . 29½	. 33½ to . 42½
Brown upper leathers:		
Of about 19 pounds.....	. 20½ to . 23½	. 29½ to . 32
Of about 11 to 14 pounds.....		. 31 to . 40½
Vache leather:		
Per skin of about 25 to 30 pounds.....	. 20½ to . 23½	. 26½ to . 31
Heaviest and thickest, and superfine cowskins, first quality only..		. 31 to . 35½
German and wild inner-sole leather.....	. 17½ to . 21½	. 21½ to . 23½
Domestic sole leather:		
Light and medium.....	. 21½ to . 26½	
Heavy, first quality, thick.....	. 26½ to . 31	. 34½
Trier sole leather.....		. 31 to . 35½
Siegen sole leather.....	. 25 to . 29½	. 33½ to . 34½
Eschwegen sole leather:		
First quality, salted ox.....	. 22½ to . 27½	. 30
Medium qualities.....	. 19 to . 22½	

Raw German oxhides were easier in consequence of the small supply, and this was particularly true of goods offering good leather. Smooth hides and hides rendered defective in skinning continued to be neglected, and could only be got rid of at low prices. Raw German horsehides were in good demand and reached higher prices than those of last fall. Raw German calfskins were dearer in consequence of the small stock, but only a limited business was done in them, as manufacturers remained rather passive in view of the advanced prices. Raw German sheepskins were still neglected, as wool is at present very depressed, and the tanneries will pay only moderate prices.

THEO. M. STEPHAN,  
*Consul.*

ANNABERG, *January 11, 1895.*

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### WINE CROP OF FRANCE IN 1894.

According to the Bulletin Statistique, a compilation of statistics published by the Minister of Finance, the total quantity of wine made in France during the vintage of 1894 amounted to 1,015,378,000 gallons, which is 286,442,000 gallons less than was made at the exceptional vintage of 1893. Last year's crop, however, was at least 228,228,000 gallons in excess of the average quantity made during the past decade. To the above-mentioned 1,015,378,000 gallons, may also be added 7,800,000 gallons of wine made on the island of Corsica, and 94,692,000 gallons made in the province of Algeria, making a total of 1,117,870,000 gallons.

The crop of 1893 was the largest ever known in France, and that of 1894 gave promise early in the year to be equally important. But an abnormal amount of rain and damp weather throughout the year had the effect of interfering with the proper development of the fruit of the vineyards. The grapes were small and the clusters very thin. Out of seventy-six wine-making departments, twelve made more and sixty-four less wine than in 1893.

The approximate value of the entire crop is placed at \$185,800,000, or, say, 16 cents a gallon.

Of course, the price of wine varies according to the locality in which it is made. For instance, the wines of the Médoc, Burgundy, and Champagne districts are worth the most, while that of the extreme south of France is the cheapest in price and most inferior in quality. The Minister of Finance, whose duty it is to tax the wine annually produced in France, estimates that out of the total amount made last year, 27,040,000 gallons were worth \$17,000,000, or, say, 63 cents a gallon, not counting the cost of barrels or barreling.

As yet, the quality of last year's wine can not be fully determined, but the price augments every day, and will, unless it should by chance turn bad, which is improbable, continue to do so until it finally goes into consumption from five to twenty-five years hence.

It is a curious fact that large crops usually make good wine, notably those of 1869, 1874, 1875, 1890, and 1893, and if this circumstance holds good for the crop of 1894, the product should be a superior one.

For many years past, French viticulturists have been complaining of short crops, but since and including the year 1893, the harvest of grapes has, in reality, been too large for the good of all concerned, for it has had the effect of glutting the market and lowering prices to a degree that has left little or no profit for growers.

On the other hand, the occasion has never been more opportune for buyers to secure and lay in a stock of superior wine at a low figure.

J. M. WILEY,  
*Consul.*

BORDEAUX, *January 9, 1895.*

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## UNITED STATES TRADE WITH PARA.

Merchants and manufacturers of the United States to fully appreciate the importance of Para, without which they can not hope to reach the highest point of success in the extension of our trade at this port, would, I feel, be benefited by a more intimate knowledge of its resources and industries. I will not minutely sketch the outlines of a city already so well known, but will simply enumerate some of the industries of this part of the world, to show the progress of Para in recent years, indicating a prosperity that will yet make it the most important of South American cities.

When we remember that there are 50,000 miles of navigable rivers upon which to float and extend her trade, and that these flow through one of earth's richest valleys, one can not fail to see that this, at no distant time, will be the most populous of Brazilian cities. Up to the present time, its growth has been the outcome of natural production, and, notwithstanding the limitless resources by which this city is surrounded, which, were they developed, would make this country agriculturally one of the most important in the world, these advantages have been almost totally neglected, for the reason that people have prospered and grown rich with greater certainty, and much more rapidly, at something else than they could hope to at agriculture. If, as is claimed by those best versed in the rubber industry, trees planted from the seed can be tapped in twelve years, and made profitable in twenty years, while the old trees, if judiciously cared for, will live from sixty to seventy years, it can plainly be seen that this unequaled source of natural wealth can be perpetuated. There is little doubt of its being explored and developed in the near future.

The geographical position of Para is one of the best in the world. The city not only commands the commerce of northern Brazil, but through the tributaries of the Amazon is reaching her arm of enterprise and commerce into Peru and Bolivia, where it secures a large portion of the trade east of

the Andes. These points are mentioned with the hope that our business men may fully appreciate the growing importance, and understand the advantages that will accrue to the country and people that secure the trade and first introduce their products here.

In many respects the people are peculiar. For example, when a certain brand of flour has been introduced, it is very difficult to sell any other grade, though of a superior quality. In fact, they are slow to experiment in business, and prefer to continue trading with old customers, unless they get very great advantages to change. So one can see readily that the policy is to be the first when possible, and to secure the markets that are continually opening up in the interior portions of South America, which, once secured and well accommodated, will not be difficult to retain. There never was a time before in the history of the two countries when Brazil was more friendly to American interests, or so willing to extend to her advantages commercially, as now. This feeling, if taken advantage of, must lead to largely increased trade between our country and this.

The only articles of which we have a monopoly in Para are flour, lumber, and kerosene; whereas we should be supplying all the cotton goods, instead of the very small portion that we now send here. The universal cry of men representing American houses at Para is that our manufacturers will not comply with the demands of the market, while English, German, and French manufacturers accede to every demand. Goods containing 60 yards may be desired with only 20 or 30 yards, and may be required with a greater or less width, as the case may be. It is claimed by men who represent American houses here that our manufacturers will not make the required changes to accommodate the market, and thus secure the trade, while other countries cheerfully comply with every requirement, and consequently get from Brazil a rich patronage that, with proper attention, with the advantages that we can obtain, would, in a great degree, be enjoyed by our country.

The progress of Para is steady and sure. Modern improvements are constantly being introduced. Two electric companies have been organized to supply the city with lights, and also power for street cars. One of these is a German company with a capital of 2,000,000 marks, but they will not be able to operate their plant in less than twelve months. The other is a Brazilian company using American machinery, which is about ready to start. The water system is good, and the water excellent. The streets in the principal part of the city are well paved with stone, and paving is all the time being extended. There is a first-class steam bakery, which was established here over twelve months ago. The plant cost \$90,000. It employs 20 men and consumes 50 barrels of flour per day. It has all the latest improvements, and turns out first-class goods. There is a small ice factory, with a capacity of 2 tons per day, but as ice is sold at  $3\frac{1}{2}$  cents per pound the demand is small, though increasing. A large factory that could supply ice at one cent per pound would create a large demand and prove a rich harvest to the investor. There are two soap factories that manufacture

from 3,000 to 4,000 boxes each per month, but they make only inferior grades of soap. Resin is the principal material used in the soap that comes from our country. England and southern Brazil supply the rest.

They have no steam laundry here. One is very much needed, as it is very difficult and uncertain to get such work done by hand. A good laundry, run on the American plan, would prove a paying investment in Para.

There are splendid opportunities for American enterprise in this part of the world, which, if taken advantage of now, will prove a boon to the investors.

Much regret is expressed and feeling manifested over the discontinuance of the American steamship line. Under the present system, the mails are sometimes delayed a week or ten days by steamers going by way of Maranhão to deliver freight before coming to Para.

The commerce of Para is controlled by the Portuguese, a people who are frugal and industrious, but they do not, as a rule, become citizens, and so are not patriotically inclined toward Brazil. As a consequence, they are not actuated by the same friendly feeling toward our country that is manifested by Brazilians, nor are they so partial to American interests as the Brazilians. All things being equal, the Portuguese will patronize Europe so far as they can to supply their needs.

A first-class hotel is very much needed.

If the American merchants would establish wholesale distributing houses here, with an American banking house, so that drafts on New York could be made as reasonable as they can be had on London, and granting the same terms as are given by other countries, a result most favorable to our country and people would ensue.

GEO. G. MATHEWS, JR.,

*Consul.*

PARA, *December 12, 1894.*

## ORANGES AND LEMONS IN SICILY.

The following report is submitted in response to a letter from Los Angeles, Cal., dated December 18, 1894, making inquiry as follows:

- (1) What will be the lemon crop this season?
- (2) What points can you give concerning the methods used in curing and packing lemons for export to this country?
- (3) Give the number of pounds per box, and any other information of importance.

I have made thorough inquiry with reference to the questions asked, having called on such persons as I thought best posted and most reliable. The information obtained is as follows:

### CROP.

There are no means by which to make even an approximate estimate, as no tax is paid on fruit exported, and hence the customs officials (from whom

the chamber of commerce gets its information) pay little or no attention as to count of boxes of fruit, and I am told by several shippers that the actual number of cases shipped must by far have exceeded the report on the subject by the chamber of commerce.

One could, perhaps, form some idea if the number of boxes shipped in 1893-94 could be ascertained, but the chamber of commerce has but lately published its report for 1893, and yet another difficulty would be met with—that is, the number of boxes quoted includes both lemons and oranges. The figures thus given in the report for the year 1893 are 856,168 boxes exported by sea from Catania to all ports, including Italian coast, European, and American ports. This, however, as stated before, is not reliable; the real number exported by ships may, perhaps, be one-fourth more; besides, there are carried away from Catania to Messina by railroad for reshipment and export, nearly one-third more, as Messina merchants come down here and buy the crops of many groves on the trees. These, however, are mostly oranges, as the Catania oranges are much superior to those of Messina. No account is kept of the fruit shipped thus by rail in carload lots; so it can easily be seen how difficult it would be to make a fair estimate.

Had a record been kept of the last year's product of lemons alone, it would be an easy matter to calculate as to this season, for the reason that this season's crop appears to be nearly as plentiful as that of last season, which is said to have been very abundant—much more so than that of the two previous seasons. The black louse is also plentiful this season, and many of the lemons are injured, at least in appearance, some being very much spotted.

#### CURING.

There is no such practice as curing lemons. The lemons are gathered and boxed in January, and from then on until the latter part of April (which is the end of the season). These are not as good keepers as those picked in October, November, and December. The more prominent shippers keep the lemons in their storehouses for fifteen days; then the boxes are opened and all the spoiled ones picked out; also, those which show signs of not being able to stand long shipment. The good ones are repacked (wrapped in tissue paper), and, as they have kept this long, I am told they will keep for several months, and are shipped.

Some packers have experienced women, who can tell at once, as they handle the fruit, which will stand a long trip and which will not. They assort the lemons; the best and most hardy are sent to America, the next to near European ports; many go to Trieste, and the balance are peeled, then cut up. The peel is used for oil of lemon. The pieces are pressed out and the juice boiled (called *agro cotto*) which latter is shipped mostly to England.

#### BOXES.

Boxes hold, of the winter fruit (being usually larger), about 300; of the summer fruit, from 360 to 400. The weight averages 39 kilograms (about

86½ pounds). Material for boxes comes "knocked down" from Trieste, and the boxes are made by the shippers.

#### OTHER INFORMATION.

As stated before, the season of the lemon crop is considered to be as follows: The fruit commences and continues to ripen day by day, every month, from about the middle of September to the latter part of April. Of these lemons, the November crop is by far the hardest and best. It will keep until late in the spring, and is therefore kept in the storehouses by the larger shippers until the latter part of March or April, awaiting demand and consequently better prices. The lemons are then mostly shipped to the United States and Canada.

When the lemons are picked in October and November, they are still green, but turn yellow in the boxes, as they would also if left on the trees. The December crop is also fairly good for keeping, especially if the weather is dry during gathering time. The January, February, March, and April crop does not keep well, depending, however, a great deal on the season and the soil upon which grown, it being necessary that it should not be too wet or too heavy. For instance, the lemons grown about Syracuse do not keep as well as those grown in the vicinity of Oci Reale, the former section being flat, the latter hilly or rolling. As before stated, when fruit is repacked after fifteen days, the spoiled having been picked out, there are also many lemons found a little bruised or specked. These would probably rot in transit; in fact, any fruit not spoiled, but not fit for packing, is either peeled and the juice pressed out, or cut up with peel, in halves or quarters, and packed in barrels with brine (seawater generally, with some salt added), and shipped chiefly to London and Liverpool for confectioners' use.

There is also an extra or forced crop of lemons produced, which is harvested in June and July, but the practice is said to be injurious to the health of the trees in the long run. It is done by letting the trees suffer for want of water during the summer months and not cultivating around them. Then, about September 1, plenty of water is given and the soil thoroughly cultivated. The trees will then at once put forth small, dwarfish flowers,\* which, during the following summer, will bring the fruit above-mentioned; it is called "Verdelli," on account of its greenish color, is sound, hard, and small, bears shipping well, and, owing to the great demand at this season, brings good prices. This forcing can, however, only be done on lands which are naturally dry and are irrigated, so that moisture can be withheld from them.

Usually, owners divide their groves into two, letting one-half be dry one summer and the other half the next summer, so they have a crop of "Verdelli" every summer, bringing them a handsome profit.

Still another variety is the so-called "Bastardi," the "Verdelli" remaining on the trees until September. They become very large by this time and

\* This, however, does not keep the tree from bearing its winter fruit (only perhaps not so abundant), as the small fruit is on the trees when the blossoms for the "Verdelli" appear.



yellow, are not so sour, and can be eaten; the peel gets very thick and the white part of the latter is also eaten and tastes quite sweet.

LOUIS H. BRÜHL,  
*Consul.*

CATANIA, *January 12, 1895.*

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Notwithstanding the severe weather recently experienced throughout the consular district of Palermo (Sicily), affecting oranges and lemons to a certain extent in some localities, it is believed a sufficient number have escaped to render imperceptible the difference in the amount of exportation and the effect on prices in foreign markets.

WILLIAM H. SEYMOUR,  
*Consul.*

PALERMO, *February 28, 1895.*

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### OLIVE CROP OF SPAIN.

Shipment of the olive crop of 1894 in this section of Spain to the United States and other countries has already begun. The bulk of the olive crop of Spain is produced in the two provinces of Seville and Cordova, both of which are embraced in the Cadiz consular district, and reports received from leading shippers in the two provinces indicate a considerable shortage in this year's yield as compared with that of the preceding year. The shortage is more marked in the province of Seville, where the spring drought was more severely felt than in Cordova. According to some estimates, the decrease will amount to as much as 50 per cent of the average yield, but this is evidently an exaggeration. Twenty-five per cent would be a more reasonable estimate, which would indicate a total yield of the province of 75,000 fanegas (nearly 150,000 bushels), the crop of 1893 having reached a total of about 100,000 fanegas.

The olives grown in this province, though smaller than the Italian olives, are superior in flavor and quality, and are generally conceded to be better for the table. In this connection, it is proper to state that the exportation of the fruit from the port of Seville to the United States has grown enormously during the past ten years, aggregating a total value of \$326,884.08 for the fiscal year ending June 30, 1894. The growth of the trade is due chiefly to the large increase in the foreign-born population of the United States, and particularly in those elements of it that come from olive-growing countries. It is also due, in some measure, to the enlarged demand for edible olives among the wealthy classes, who have acquired a taste for the fruit in their travel or residence abroad.

The olives produced in the district of Cordova are mostly used for the manufacture of oil, a very small percentage of which is exported, the domestic demand keeping pace with the supply. The total exports of olive oil

from this district to the United States during the past fiscal year amounted to only \$10,043.94. The trade, however, will probably assume much larger proportions in the future, unless other sources of supply are developed.

The customs duty of 20 per cent ad valorem imposed upon olives, green or prepared, by the United States tariff of 1894 will not, I think, cause any appreciable decrease in importations, and will, therefore, result in a clear gain in revenue to the Government.

CHAS. L. ADAMS,  
*Consul.*

CADIZ, *December 19, 1894.*

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### SHERRY VINTAGE OF SPAIN.

The vintage of 1894 in the sherry-wine district of this province shows a marked decrease in quantity as compared with that of the preceding year, which was itself below the average of former years. The decrease for the current year is estimated by those engaged in the wine business at one-third as compared with the previous year, but this estimate is simply a matter of general opinion, so far as I can learn, and is not based upon actual statistics. That the decrease in the total production of *mosto* (new wine) is quite noteworthy, however, can not be questioned.

This result is due to several causes, but chiefly to the fact that the spring of this year, in which season the vines make their growth, was a very dry one, the drought diminishing the supply of sap and cutting short the customary fruitage. Another factor in reducing the quantity of the crop was the presence of phylloxera in some of the vineyards of the district, as heretofore reported.\* Still another cause of the falling off is the fact that, owing to a scarcity of ready money, a large number of the *viñeros* (vineyard owners) lacked the means to give proper cultivation to their vineyards—a very important essential to an abundant yield.

The quality of the new crop, on the other hand, is reported to be very superior and much above the usual average, as the grapes were exceptionally sound and were gathered in exceedingly fine weather. Starting under such favorable conditions, it is expected that the new wines will develop most excellent qualities, and that both the grape growers and the *cosecheros* (cellar owners) will reap some recompense for the shortness of the crop in the increased prices that will be realized. Considerable quantities of this year's *mosto* have been sold for \$30 per butt (about 22 $\frac{2}{3}$  cents per gallon), and some at even higher prices. This is much above the average price of recent years.

CHAS. L. ADAMS,  
*Consul.*

CADIZ, *December 13, 1894.*

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\* See CONSULAR REPORTS No. 167 (August, 1894), p. 644, and No. 170 (November, 1894), p. 336.

## APPLE CROP OF FRANCE.

The apple crop of France this year is almost a total failure. An official report on the subject is in course of preparation, and will embrace statistical returns from the apple-growing districts of France. According to the best estimates of the officials of the Halles Centrales (central markets) of Paris, and of leading firms in the trade, the yield of 1894 does not exceed one-fourth of the average. The autumn having been unusually warm, has been unfavorable to the preservation of the fruit, and there is a growing scarcity in the supply, together with a corresponding appreciation of values. The best opinion is that the domestic product will be entirely exhausted on or before the 15th of January.

Choice and fancy apples, known as "*reinettes* of Canada and Calville," are quoted to-day at from 40 francs (\$7.72) to 60 francs (\$11.58) per 100 kilograms (220.46 pounds), according to quality, and inferior varieties at from 25 to 35 francs (\$4.82½ to \$6.75½) per 100 kilograms. The tendency of prices is upward, and, unless there shall be an unprecedentedly large importation, a considerable advance is anticipated.

The winter consumption of apples in France, and especially in Paris, is very large. Leading dealers have informed me that they expect the demand during this entire season to far exceed the supply.

The importation of apples for 1892 was 6,703,853 kilograms (13,716,083 pounds), and, for 1893,\* 5,105,475 kilograms (10,445,802 pounds).

For information on this subject, I am indebted to several officials of the Department of Agriculture and the Halles Centrales, of Paris, as well as to Tissot frères, 35 rue du Pont Neuf, Paris, a leading house in the trade.

SAMUEL E. MORSS,  
*Consul-General.*

PARIS, *November 30, 1894.*

## SUPPLEMENTARY REPORT.

On the 30th ultimo, I transmitted a report on the "Apple Crop of France." I had delayed sending this report pending the receipt of official figures on the subject from the Ministry of Agriculture. I am just in receipt of a letter from this Ministry inclosing the figures showing the extent and value of the apple crop of 1893, as follows: Total production, 38,846,474 quintals (8,576,647,517 pounds), valued at 122,027,012 francs (\$23,548,214). The letter continues:

As regards the apple crop of 1894, the Department of Agriculture does not yet possess the official figures. Nevertheless, in answer to telegraphic inquiries addressed to the prefects

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\* The crop of 1893 was exceptionally large.

of the principal districts producing cider apples, it appears that the crop of 1894 is generally estimated to be inferior to that of 1893 by one-half.

SAMUEL E. MORSS.

*Consul-General.*

PARIS, *December 7, 1894.*

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## APPLE CROP OF GERMANY.

Statistics in regard to the planting and export and import of apples are hard to procure, owing to the small figure which this fruit cuts in the reports from the German Empire and from the Prussian Kingdom. In 1877, the imperial statistics ceased separating fruit from the general items referring to wheat, vegetables, etc. In 1893, the figures of export and import of fresh fruit, including apples, were as follows: Export, 17,887 tons, valued at 5,200,000 marks (\$1,237,600). Of this, Great Britain took 10,328 tons, valued at 3,600,000 marks (\$836,800); Switzerland, 2,892 tons, valued at 600,000 marks (\$142,800). Import, 94,058 tons, valued at 12,900,000 marks (\$3,070,200).

The imports of dried fruit were 32,197 tons, valued at 11,300,000 marks (\$2,699,400), of which 2,968 tons, valued at 2,100,000 marks (\$499,800), were from the United States.

Apples, as well as other fruit, find a good market in Germany, particularly in Berlin, during the winter months. In summer and autumn, the local orchards flood the markets with comparatively poor fruit, so far as Prussia is concerned, and not much better quality so far as southern Germany is concerned.

There is demand for good, sound American fruit, but no supply. This arises from the fact that, hitherto, large takers of fruit have been unable to secure trustworthy firms in the United States on whom they could rely to furnish them with fresh fruit of a given grade at all seasons. Either no fruit at all can be had or shippers send over unassorted, half-rotten stuff. The fault lies in America. The fruit growers should pack carefully the sorts of apples which remain sound many months, and firms should keep themselves posted in regard to the needs of German consumers, and by the exercise of intelligent, faithful care, establish and keep up steady connections.

As it is, Berlin merchants can never be sure that a given quality of fruit can be obtained next year. This is in part the trouble with fruit all over the world, but agents and shippers in the United States can guard against such uncertainties of the crop by obtaining their supplies from different States.

North Germany ought to be a field for American apples. There is no need of urging the excellence of them, because the people know all that. In fact, there is a large import of the unselected ordinary kinds now, and this has always existed. The difficulty lies in the methods of supply. These

are helter-skelter, temporary, and uncertain ; so that American apples of a high grade can not be considered, by German sellers, as a staple article for consumers.

Apples at retail bring a very high price in Berlin during the winter months. There would also be a good demand for fine dried and preserved fruit.

CHARLES DE KAY,  
*Consul-General.*

BERLIN, *October 29, 1894.*

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### APPLE CROP OF GREAT BRITAIN.

The English apples are over about the middle of September, and it is then that the United States supply the early market. The fruit then sent is called in the trade "summer fruit." It is tender and requires quick sale. It has not much competition until the middle of October, when shipments from the Dominion of Canada begin. The necessity for putting this early United States fruit immediately upon the market militates somewhat against prices. They run usually from 9s. to 13s. (\$2.91 to \$3.26) per New York barrel, which contains 3 bushels, or, in weight, about one cwt. (112 pounds). The Dominion apples bring through the winter a higher price than the American. They sell at from 12s. to 16s. (\$2.91 to \$3.89) per Canadian barrel, which contains about one-fourth of one cwt. (28 pounds) more than the American barrel. The Dominion apples come in the largest quantities in January and February, are said to be firm, hard, and well colored, and are distinctly the favorite in the market.

It is reported that just now a certain number of buyers on behalf of New York firms are in the Dominion buying up the fruit and sending it to this country from New York and other ports.

The freight from Canada, from Portland, or from New York runs from about 3s. to 4s. (73 to 97.3 cents) per barrel.

The apple crop this year in England is exceptionally small, owing to frost at a critical time in the spring, and the market is expected to be good all through the winter. The Dominion and the United States will probably have this market to themselves until the spring, when French, Australian, and New Zealand apples come in.

There has been in the spring of this year a new importation of Italian apples, which have come in considerable quantities.

The market will apparently take very large quantities of good, sound, firm winter apples, carefully packed, as well as good cider in large quantities, realizing about 20 cents per gallon.

PATRICK A. COLLINS,  
*Consul-General.*

LONDON, *October 29, 1894.*

## DRIED APPLES IN COLOGNE.\*

An order has just been issued by the police administration of Cologne and published in the local papers warning the public against eating sliced American dried apples. It says that large quantities of such apple slices, chiefly of American origin, are offered for sale here which contain a larger or smaller quantity of zinc. Of thirteen samples selected for investigation, eleven are said to have contained zinc. It asserts, further, that the presence of zinc is due to the fact that the apple slices from America are not dried, as is done here, on wooden racks, but on zinc netting. By this process, there is formed in the apples maltate of zinc, which has an analogous operation to that of lactate of zinc. According to experts, the eating of such an article may undoubtedly be injurious to health, especially to children and those who have weak constitutions. Continuing, the mayor of the city says:

I therefore feel obliged to give strict warning against the sale and the eating of American dried apple slices, and give notice to those offering such article for sale that they will be proceeded against in accordance with the imperial law regulating the trade in food and food products.

There is a considerable trade in this market in American dried apples, and I am informed by an agent representing a large Chicago firm here that this order will frighten the public against eating such apples and thereby injure, if not destroy altogether, this trade.

According to the statistics for the German Empire, there were imported into Germany from the United States in 1893, 2,968 tons, and in 1894, 2,133 tons of dried fruit, which I understand to be dried apple slices.

WM. D. WAMER,  
*Consul.*

COLOGNE, *February 9, 1895.*

## SUPPLEMENTARY REPORT.

Referring to my report forwarded to the Department of State under date of February 9, I have to report further that a number of the dealers here in American dried apple slices have since appealed to the mayor of Cologne to modify his warning to the public under date of the 6th instant so as not to prejudice consumers against such apple slices that are dried (evaporated) on wooden racks and contain no zinc. This has been done publicly by the mayor as follows:

My notice of the 6th instant has given rise to the misunderstanding that the eating of American evaporated apple slices is injurious to health, and those persons offering such

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\*See "Dried Apples in Germany," CONSULAR REPORTS No. 172 (January, 1895), p. 89.

article for sale would be punished. This is by no means the case. The notice has reference only to such American dried apple slices as have been dried on zinc netting and contain zinc, and not to those that have been dried on wooden racks and contain no zinc.

If the American firms desire to hold on to this already thriving American trade in this market, they are advised to evaporate the apples only on wooden racks, and see to it that the apples so prepared are entirely free of zinc, as the mere traces of this ingredient would cause them to be objected to by the health officials. One agent has suggested to me that it would be advisable for the American firms to furnish with each shipment an authenticated certificate that the apples have been analyzed by an expert chemist and are absolutely free from zinc.

WM. D. WAMER,

*Consul.*

COLOGNE, *February 11, 1895.*

### THE KOLA NUT.\*

I have the honor to report that I have made exhaustive inquiries in this town (Mozambique) and on the mainland, and find that the Kola nut is unknown here. I am informed also that it is unknown in the Zambesi district. It seems that this nut will only grow in a hot and damp climate, like that of the Niger delta, for instance. Although the rains are profuse here during a few months of the summer, the country is parched the remainder of the year.

I have just returned from a week's exploring expedition into the Namal country, where I found the heat to be intense, and all vegetation save the mangrove, mango, caju, and mimosa trees practically dead. In many places, the soil was entirely denuded of grass and bush, and was cracked and seamed in all directions by the great heat of the sun. No water could be found except by digging in the deepest gullies, where ferns, bamboo, and rank grass were often to be found, but the water thus obtained was full of sediment and not fit to drink. The only thing discovered worth mentioning was an orchid, the *Ansedia*, which is not uncommon here.

W. STANLEY HOLLIS,

*Consul.*

MOZAMBIQUE, *November 1, 1894.*

### PROPERTIES OF THE KOLA NUT.

Henry G. Sharpe, captain and commissary of substance, U. S. Army, St. Louis, Mo., having noticed in the press references to the report upon the kola nut, as published in CONSULAR REPORTS No. 171, has kindly supplied

\* See CONSULAR REPORTS No. 171 (December 1894), pp. 532-534.

the following translation from the French of an article from the *Scientific Review*, by Dr. Gustave Le Bon:

[Translation.]

The kola nut has been used by the African negroes for a long time. The tree which produces it grows only in very limited regions, but its properties are known in all the Dark Continent, and there is scarcely any African territory where the precious fruit is not an object of considerable commerce. By means of it, the natives can, with doses which do not exceed 40 grams a day, make very difficult marches and laborious work in full tropical sun, without experiencing the least lack of breath in going up very steep inclines, and this also when bearing loads of about 40 kilograms. The kola enables them, besides, to take less nourishment, and, in time of want, to live without loss of strength or vitality.

In an official report to the English Government dated September, 1890, on the effects of this substance, the English consul at Bahia remarked that by use of the kola the burden which could only be borne by eight Brazilian negroes can be easily carried by four African negroes. He cites the case of a sack of sugar weighing 80 kilograms refused as too heavy by a Brazilian negro, young and vigorous, was accepted and carried 4 leagues by an aged African negro having first used the kola nut.

The European explorers of Africa who have used the kola according to the methods of the negroes, have established that the properties attributed to this substance have been in no way exaggerated. By means of it, they have been able to undergo the greatest fatigues. It would seem natural that so precious a stimulant would be tried in Europe before a long time. Its introduction, however, is of very recent date, and this is due principally to the persevering efforts of Mr. Heckel, professor of the faculty of sciences and of the school of medicine at Marseilles. This authority has just collected in a volume of 400 pages the experiments which he has pursued during the last ten years on the kola nut and its use. It is a most conscientious work, and one which does honor to its author.

We will recapitulate some of these observations, and say some words concerning the experiments that we have had occasion to make on this substance. Notwithstanding the numerous works published on the kola, we are not yet fully settled on this subject. From a chemical standpoint, its composition is still imperfectly known; from a physiological standpoint, its effects have often been very different. Concerning this last point, we will show that the inequality of the results observed are in a great part due to the method of using the kola. Guided by the chemical researches, which are very incomplete, the chemists who have especially investigated this substance, have made, without doubt, some preparations which have deprived it of the peculiar active principle which it contains. It results that the valuations of it are very contradictory, depending upon whether the kola is used pure, as is the custom of the negroes (the only rational method of proceeding), or whether in the chemical preparation, as is now generally done. The latter use of it has aided strongly in destroying the public confidence in the properties of the kola.

When the grains of this tree came to Europe, chemists submitted them to analysis. As they found in it large quantities of caffeine, (2 per cent, or nearly as much as in coffee), it was naturally supposed that caffeine was the active principle of the kola, and that, therefore, it was much more simple to substitute this alkaloid for it. Maintained at the Academy of Medicine, by the high authority of Mr. Germain See, this opinion naturally retarded for a long time in France the judicious employment of the kola. It has, moreover, had the effect of completely arresting the numerous experiments made in the army at the instigation of Mr. Heckel, and we may be certain that this product will take the place that it should, not only in therapeutics, but especially in the alimentation of an army in time of war, only when it returns to us from England or Germany.

When, about ten years ago, I heard for the first time, reference made to the properties of the kola and the researches of Mr. Heckel, I perceived immediately what resources such an agent would be for explorers. In my voyages across Asia, I have been obliged sometimes



to make long marches exposed to the hot sun, and the temperature exceeding 50°\* Knowing only of the use of cold tea, to which a small quantity of alcohol had been added, to sustain strength, I had dreamt of an elixir which would relieve fatigue, when the necessities of the journey obliged one to take what is commonly called a "bracer." Therefore, when I heard the kola first spoken of, I resolved to study it immediately. My first attempts gave me very varied results. Suspecting that they were either due to imperfect preparation, or to kola nuts of doubtful origin—the only nuts that were then in commerce were all of the dried product and of rather doubtful appearance—I decided to make use of fresh kola nuts exactly like the negroes, without having recourse to any manipulations to alter them. Thanks to the kindness of my friend Bayol, then lieutenant-governor of Senegal, I received several kilograms of it, which reached me in a perfectly fresh state. At the end of several days' use by myself and persons of my household, I had absolutely determined the properties of the kola. Nothing has been exaggerated concerning that which has been attributed to it. It indeed increases, and very largely, the power to endure fatigue, and should be very useful to explorers and soldiers in campaign.

To what principles does the kola nut owe its properties? This question has already provoked numerous inquiries. Before pointing out the conclusions to which I have arrived, I will first state the results obtained by different experimenters. The most important analyses published are those of Mr. Heckel. He found in the kola nut 2.35 grams per cent of caffeine, and 0.023 grams per cent theobroma. In England, Lascelle Scott found about the same figure for the caffeine, but a proportion of theobroma four times as large (0.084 per cent). As concerns this last substance, I will remark in passing that the analysis of Mr. Heckel, and very probably that of Mr. Scott, of which I do not know the details, leave very much to be desired. The original part of the analysis of Mr. Heckel was to establish a particular body—the red color of the kola, which exists in the proportion of 1.3 per cent in the kola nut; he obtained it by treating with water the alcoholic solution of the kola, but did not succeed in defining its chemical constitution. Having seen by experience that caffeine alone would not replace the kola nut, and finding in the kola nut no other substances than caffeine, theobroma, and the red portion of the nut, Heckel was led to suppose that to this red portion of the kola was due, in great part, the action of the nut. More recent works mentioned by Mr. Heckel himself in his book seem to justify, only very incompletely, this hypothesis.

A chemist of Orlangen, Mr. Knebel, has maintained that the red of the kola nut was a glucoside, susceptible of decomposition in the presence of water into caffeine and a coloring substance. The red of the kola nut under the influence of mastication, is transformed in a great part into caffeine when it arrives in the stomach, (caffeine which is added to that which the nut contains in its natural state). It is, however, difficult to admit that the red of the kola can have other qualities than that of caffeine. To attribute to this, caffeine in its new formed state, as Mr. Heckel has done, different properties to caffeine in its natural state, forms a very free hypothesis and one very difficult to be sustained. But if Mr. Heckel has not been able to determine the causes of the differences existing between the properties of the kola and that of caffeine, his comparative physiological experiments have at least succeeded in placing beyond doubt these differences. They have been tried upon several hundreds of soldiers and mountaineers and are very conclusive. Their details fill one hundred pages of the work and form the most interesting and practical part of it.

It matters very little to the public that the kola owes its properties to such and such substances. What does interest it is to know if it really does possess these properties and how to make use of it. The doses employed by Mr. Heckel were one gram of kola in powder each hour on the march. This powder was incorporated in thin cakes, weighing about 10 grams, composed of sugar and flour. For some time in commerce, these cakes could be found under the name of "accelerating rations." Mr. Heckel says, somewhere in a note, that their manufacturer had been ruined. I have not been very much surprised at it, for, truly, I have never met with such badly prepared products, having a more detestable taste. Be that as it

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\* This must be degrees centigrade, which equal about 122° F.

may concerning the unappetizing form given by Mr. Heckel to his rations called "accelerating," the comparative experiments made by him prove clearly the differences which exist between the caffeine and the kola nut. The kola permits one to undergo fatigue, and the caffeine does not. Mr. Heckel cites in support of his experiments upon man, investigations of the laboratory which show that the kola increases and prolongs the intensities of the muscular contractions, while with the caffeine, the stimulation is of very short duration, and the muscle wears itself out very rapidly and frequently more than in the normal condition. The thing is possible, but the experiments made upon man seem to me to have different importance from that of experiments of the laboratory. I do not deny the theoretical interest (much more theoretical than practical) that there may be in determining the principle which gives to the kola its properties; but that which is important to establish at first is that the kola, as nature gives it to us, possesses certain properties that we can utilize immediately. This fact having been established, we will be able at our leisure to investigate the causes. I am far from considering the question as entirely settled; however, in the interest of future experimenters, I will indicate the results of my own observations on this point; they only relate, moreover, to the physiological side.

When I commenced to study the action of the kola, I asked myself, naturally, if it was not possible that this action could be attributable to the caffeine. Practically, it was very interesting to determine, for the use of lozenges containing some centigrams of caffeine would have been much easier than the direct use of the kola, the mastication of which was rather disagreeable. Unfortunately, the first experiments made upon myself and other persons led me exactly to the same views as Mr. Heckel, of the unquestionable difference between the caffeine and the kola. With the caffeine, I obtained a stimulation much more cerebral than muscular, not increasing the resistance to fatigue, and always followed with depression. With the kola, I obtained, on the contrary, a prolonged stimulation, making it possible to withstand wonderfully long fatigues. At this time I was breaking in a difficult horse, the management of which required by reason of the violent movements of the animal, much prolonged muscular vigor. I did not require a chemical analysis in order to understand or to know when I was under the influence of the caffeine or under that of the kola; the caffeine, then was not the active element of the kola, or at least it was not by itself.

The red portion of the kola did not appear to me to possess any special properties, and constituted, moreover, a product imperfectly determined and of a complicated preparation which seemed to me useless to experiment with.

There remained the theobroma. I resolved, in spite of its small degree of solubility, to experiment with it. I had made some lozenges with theobroma (10 centigrams) and placed myself under their action several times. With the exception of diarrhetic action, rather marked, the effect was entirely nil. I then adopted the idea of combining the action of caffeine and theobroma, by taking, at the same time, lozenges containing 10 centigrams of caffeine and 2 centigrams of theobroma. The effects observed went very much beyond my preconception. They were as well for myself as for the persons, naturally not informed, upon whom I was making the experiments, nearly identical to those of the kola nut. For several weeks I made use alternately of the pure kola and a mixture of caffeine and theobroma, without observing any essential differences between the two products. I think I may then conclude that it was to the simultaneous presence of these two bodies that the kola owes its properties, and that their mixture is the one which represents better the properties of the kola. Why has the caffeine and theobroma alone such different effects upon the human system than those produced by their mixture? This question, for the moment, I shall completely ignore. In spite of the paternal feelings that I may very properly have for the mixture of caffeine and theobroma, I do not recommend the use of it, and that for two reasons; the first is that theobroma being a substance rare and expensive, which, moreover, is not made in France, would be certain to be adulterated by caffeine, and all the experiments would thus be made false from their very beginning. The second reason is that when one possesses an article furnished abundantly by nature, of which the composition is imperfectly known to us,

like the kola nut, there is absolutely no reason for replacing it by artificial products which are more expensive, and, therefore, liable to all sorts of adulteration.

For one who desires to make use of the kola, I would advise him to consume it exactly as do the African negroes—that is to say, by masticating slowly fragments of the fresh nuts, and to reject completely all other preparations. I say fresh nuts, and not the dried nuts. These last are valued very little by the negroes and are produced from a very inferior variety of the kola, but they are, unfortunately, the only ones used by the chemists. But nothing is easier, when the medical fraternity will demand it, than to obtain the fresh nuts from the coasts of Africa, at the cost of 2 or 3 francs per kilogram, and to preserve them in this condition for a very long time, since the negroes know how to keep them fresh for more than a year. I have kept them in a perfect state of freshness for more than six months simply by covering them with vegetable leaves a little moist and frequently renewed. By rolling up this nut in sugar or placing it in some saccharine preparation it might be kept for a very much longer time. All sorts of the dried nuts of the kola, the only ones, unfortunately, that it is possible to obtain to-day in the laboratories, should be absolutely discarded. Fresh nuts, by reason of their characteristic appearance, can not be adulterated; moreover, it is impossible to recognize by their appearance the true kolas from the false ones when they have been dried. The negroes not only reserve for drying the modified kolas, but, moreover, as Mr. Heckel has shown, they substitute for the true kolas, false kolas which belong to a very different family, and which do not contain any traces of the alkaloids, and form an entirely inert substance. It is easy to see what would be the value of medicines composed of products of such an uncertain origin. But it is equally important to know that the researches of Mr. Heckel and myself show very clearly that, with the exception of pure powder, very little used and derived very frequently, besides, as I have just said, from adulterated nuts or of an inferior quality, all of the pharmaceutical preparations of the kola (wines, extracts, sirups, tinctures, etc.) which are found in commerce, possess none of the qualities of the kola nut. They hold of this substance only a little of the caffeine (the theobroma and the red portion of the kola being insoluble). In reality, the properties of these different preparations are simply those of a very dilute solution of caffeine. The physician, the mountaineer, and the traveler, who imagine that, by taking such drugs they obtain something resembling the kola nut are completely deceived, and are thus liable to form an opinion entirely erroneous. The common cup of coffee is richer in caffeine than the pretended wines and sirups of the kola of the chemists, and it is worth certainly more. I advise them to select it until such time as they may be able to procure, in its fresh state, the wonderful seed of which I have just rapidly sketched the history.

#### SPECIMENS OF THE KOLA.

I have the honor to state for the information of the Department that, in view of the voluminous correspondence which has followed upon my report on the growth and medicinal properties of the kola nut\* and the comments published in the newspapers, together with the numerous demands made upon me for samples and general information on the subject, I have decided upon sending to the Department three samples of the kola nut,† viz, one in the green or crude condition as taken from the tree, packed in a small basket, marked No. 1, and two other samples of the best prepared specimens of the fruit slit into small pieces, marked No. 2 and No. 3, respectively, being first and second grades of dried kolas; these are packed in paper parcels. The quoted market prices in Sierra Leone to-day are, say, 14 to 16

\* Published in CONSULAR REPORTS No. 171 (December, 1894), pp. 532-534.

† Samples received by the Department.

cents per pound for crude, and from 8 to 36 cents per pound for dried, according to quality and care in preparation. It is, however, only proper to remark that these prices are subject to fluctuations; according to the trade estimate of supply and demand.

My object in sending these samples will obviously suggest itself to the Department, viz, that as it is beyond question that I can supply the numerous demands made upon my time both as regards samples and correspondence in this matter, I resort to the alternative of referring all applicants, both as to samples and my report, to the State Department.

ROBT. P. POOLEY,  
Consul.

SIERRA LEONE, *January 1, 1895.*

### ROFIA-PALM\* FIBER.

This fiber is the product of the rofia palm (*Raphia ruffia*), one of the most useful of the palm family. The tree is a native of Madagascar, growing profusely along its entire coast line near fresh water rivers, lagoons, and marshes, and the very best quality actually in the water. It is practically indigenous in the valleys all over the island. The natives cut the new leaves from the tree after they have obtained a height of some 7 feet and have just commenced to spread or open. Two new leaves always sprout out simultaneously from each tree and from the same sheath. In appearance and gracefulness, a fully opened rofia-palm leaf is midway between the leaf of the cocoanut palm and the plume of the ostrich.

After removal from the tree, the leaves are separated, the leaf spears or feathers being cut away from the heavy leaf stalk or large center rib and their tips cut off or not, according to the whim or needs of each worker. The inhabitants of the fishing villages are the main producers of rofia fiber because they are the main consumers of the byproducts, making their finer fish nets from the small center rib or spine that runs down the middle of each leaf spear. The entire native population use the leaf stalk or large center rib in all their building and portage operations.

The first process of manufacture, in turning these leaf spears into the rofia of commerce, consists in the removal, with a very small sharp knife, of the center ribs of the spears. These ribs divide each spear in half. Each of these halves of leaf flesh are then stripped of their under covering, which, in the closed condition of the spear, is, for the moment, the outside. This removal is readily accomplished by making a small cut across the leafy flesh, above-mentioned, about one inch from the base. The fiber, which exists in the shape of a vegetable film, or covering, on the under side of the leaf spear, is pressed up and loosened with the knife, and, being caught between the thumb and said point, is ripped off at one pull. The same thing is done

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\*Frequently called and written "*raffia*" or "*rafia*."

with the other half of the spear flesh by merely reversing the same in the hand and repeating the operation. Practice makes the process a simple, perfect, and rapid one, and a woman can readily strip, per day, what will yield some 5 pounds of rofia. It must be understood that the men cut the rofia leaves and carry them to their homes; the women do the rest. They, however, rarely strip more than what would yield 2 pounds of rofia, because the curing of the fiber is partly accomplished the afternoon of the same day that it is stripped from the spear flesh.

The strips of whitish fiber thus secured, ranging from 2 to 4 feet and over in length, are spread out upon mats in the sun to dry in loose bunches. When partly dry, they are knotted into one pound bunches and spread, usually upon the roof edges of small sheds or outhouses, to finish curing, and are most carefully guarded against rain or dew. In three days of good sun drying, the rofia is ready for market. I regret to say that, owing to the cupidity of the natives and traders, much the larger portion is marketed after only one day's curing. The greener the fiber the heavier the weight; hence the temptation.

Should rofia become wet in process of curing, or afterwards, it will turn red within two or three days' time. This also happens if it ferments, in bulk or bale, because of being imperfectly cured, or damp, when baled. Many a trader has learned to his cost that rofia can not be bought on sample; each lot must be carefully examined, especially when baled. The natives, especially native traders, profiting by the evil example of their Malabar competitors, have been known to wet the rofia in the center of a bale to make it heavier, just as in the rubber districts they put stones in the center of their rubber pockets and in the interior (capital) they have invented a means of wrinkling ox hides, while drying, so as to rub in and fill the wrinkles with ocherous clays.

Among the natives, preparation for shipment consists in twisting from 2 to 4 pounds of cured rofia into a switch or twist, somewhat resembling the old-time homemade twists of tobacco, only being very much bulkier. These "twists," or "ropes," as they are sometimes called, and again "hanks," are then tied up into bundles and sold to the trader, in barter almost entirely. It may be stated that scarcely 5 per cent of the actual manufacturers ever receive money in payment for their rofia.

Among the traders—native, Malabar, Creole, or European—these twists are sorted, and graded, and baled into 100 pound bales. These, in their turn, on arrival at the seaports, are compressed by machinery and bagged. Many of the smaller traders send their rofia to brokers, or commission men, who, in turn, sell to the actual shipper; in other cases, these small inland traders act as agents for European or Mauritian firms.

While in transit, rofia must be carefully guarded against wet and damp; otherwise it will become absolutely worthless unless it is immediately opened and sun-dried; and even then it will turn more or less red, but would not be damaged otherwise than in its selling price.

There is no particular time for preparing, cutting, or curing rofia. The crop is a constant one, harvested to suit the wants or appetites of the natives, being received in the seaport towns at all times and seasons, weather permitting its transport, and shipped as shortly after receipt as possible. By wants and appetites, I mean whenever they need the center ribs for fish nets, for rice winnowers (a small, wicker-like basket, very shallow), for baskets, or for fine mats; whenever they need the large center ribs for house building or portage purposes; whenever they desire the edible tops for food.

The flesh top of these palms forms an excellent species of food, not quite so palatable and sweet to European and American palates as the cocoanut-palm top, but by them much relished as a salad. The natives use these tops boiled in salt and water, and so do many foreigners. The removal of the tops, however, as with the cocoanut palm, means the death of the palm, and is usually done before it bears fruit. It may be roughly stated that fully 50 per cent of the young rofia-palm trees are annually destroyed in this way, and but for its remarkable hardness, ready growth, and the ease with which it is propagated, this fact alone would mean its speedy and total extinction. Within four years, local Malagasy laws have been promulgated forbidding this terrible destruction. Yet it still exists, but in a surreptitious manner; or whenever they crave rum, cloth, or vazaha finery, for which rofia fiber alone can be bartered.

The rofia palm belongs to a fairly long-lived family. Its period of commercial usefulness, however, is not nearly so long as that of the majority of the palm family. After it once fruits, say between the twentieth and twenty-fifth years, the natives do not use the leaf spears for the production of rofia fiber, as they claim it is no longer good for that purpose; nor do they eat the flesh top after it has reached fruition.

The fruit of the rofia palm is not edible and resembles very much, from a distance, a large number of yellowish green, sometimes shaded with brown, pineapples, without tops, strung upon a cord as closely as they can be packed, and drooping gracefully and in profusion from the center outward on long, rib-like stalks, which gradually droop more and more until wind, or maturity, causes them to drop off. Upon closer inspection, however, these pineapples turn out to be composed of a large number of individual masses of nuts, or small cones, varying anywhere from a hen's to a goose's egg in size. These masses of nuts droop from individual stalks from the large rib-like stalk, and overhang each other in such a fashion as to lead to the above-mentioned impression. These masses of nuts are attached to the larger rib stalk by a smaller one. This latter bears a great resemblance to a human hand, except that it has a very large number of digits instead of but five. Upon the outside of these digits the nuts cluster as closely as possible. The inside being entirely free of nuts, these digits can readily conform themselves to the contour of the hand stalk just below them, thus giving an impression of compact unity utterly at variance with the actual fact. Were all of these digits of the exact size, and these hand stalks of the same length, there would be no break

in the continuity of the masses; but variation in sizes therein cause the broken outlines and the consequent peculiar impression of a string of pine-apples. The shell of these nuts has a commercial value for ornamentation purposes. The kernel could, with proper manipulation, I feel assured, be converted into a most excellent article of vegetable ivory, being very hard and compact, when dried, and of just the right color. This is, however, so far, an unexploited industry.

Rofia is one of the most staple of Madagascan products, finding an even more ready market than rubber or caoutchouc. The price in Tamatave, or we might say free on board, as the costs of putting on board in quantity is a very nominal one, ranges from 5 to 9 cents for A<sub>1</sub> rofia, while red rofia usually brings about 2 cents per pound less than the A<sub>1</sub> white. The price in Madagascar, however, depends greatly upon the latest quotations from London, although it has occurred, within the past year, that rofia brought here in Tamatave one cent per pound more than in London, owing to competition between buyers who were under contract to supply certain quantities within a given time, make or lose.

Practically, every one doing business in Madagascar buys rofia, either for speculation, in barter for goods, on commission, or as agents. I understand that heretofore we had no market in America for rofia; I believe one or two shipments were made, which failed to realize nearly as much as simultaneous ones sent to London. I would suggest, however, that as we have a regularly established Boston house here (George Ropes, 5 South street, Boston, Mass.), who have to make return shipments of Madagascan produce to cover their cotton importations, or else pay heavy bank discounts, importations of rofia could be readily, cheaply, and promptly effected were a demand once extant in the United States for rofia fiber. Again, any business firm, German, French, or English-Mauritian, would readily manage to conduct all necessary business negotiations and correspondence in the English language, if there were any money for them in doing so; and furthermore, we have two Americans in business here, one of whom (John A. Ponpard, of Ponpard & Co., Tamatave) buys and sells rofia on commission as a means of livelihood, and the other (Edw. S. Duder, of Duder & Turner, Tamatave and Antananarivo) manipulates rofia to some extent.

Through the courtesy of Messrs. Henry Oswald & Co., of Tamatave and Hamburg, who are the agents for the Castle Line of steamers, by which line the great bulk of the rofia carrying trade has latterly been monopolized, I am able to quote rates on rofia, Tamatave to New York or Boston at 77s. per 1,600 pounds—that is, \$19.25 in Madagascan currency, or \$18.58 in United States gold.

I believe rofia can be imported free into the United States in its fibrous condition, under article 497 of the free list of the new tariff act.

Purchasers of rofia in America, when considering the prices quoted for rofia here, must bear two things in mind—first, the rofia is sold here by French pounds and not by pounds avoirdupois; second, the price paid is in

cents of the Madagascan dollar (which is a French 5-franc piece) and actually worth but 96½ cents in United States gold. The French pound is equal to 1.1023 pounds American. All charges and costs are paid in the same coin (French 5 franc piece) reckoned at 100 cents to the dollar. Therefore, when rofia is quoted here at 5 cents its actual cost per pound (American) it is about 4.38 cents in United States gold.

Whenever rofia crumbles to the touch, or is found in a dry-rotted or damaged condition, it is due entirely to its having either become wet after baling, while in transit or in storage, or else to its having been packed or baled in a damp or imperfectly cured condition. These resultant conditions and their contributive causes can readily be distinguished, one from the other. When only the outside of the rofia is crumbly, or dry-rotted, while the inside of the bale remains sound and good, the condition is due to wetting since baling, while in transit or in storage; furthermore, the bale coverings will show corresponding damage stains. On the other hand, if packed in a damp or imperfectly cured condition, the bale coverings will be outwardly clean and clear of stains, while the contents will be crumbly, dry-rotted, or damaged. This may be the case only at the center, or just where the originally damp, or uncured, rofia was in the bale, including such surrounding fiber as the amount of moisture present could by capillary action reach into, or as the gases, incidental to the resultant chemical combustion or fermentation, could inter-permeate. Naturally, this would depend on the density of the bale, the amount of moisture present, the temperature of the surrounding atmosphere, etc. The only safeguard against these damages and losses, are the most scrupulous care at this end in packing and in storing, and a judicious insurance, both while in transit and in storage.

EDW. TELFAIR WETTER,

*Consul.*

TAMATAVE, *December 22, 1894.*

## THE COLOCYNTH PLANT.

The colocynth, or bitter apple (which provides in its dried pulp a well known purgative medicine), grows abundantly on the maritime plain that lies between the mountains of Palestine and the eastern shore of the Mediterranean. It is found from below the city of Gaza on the south to the base of Mt. Carmel on the north. The dwellers along this plain pay little attention to the plant, and spend neither time nor labor in its cultivation. It grows without cultivation, the soil and climatic conditions producing it without the help of the husbandman. With some attention, the plant would undoubtedly bear a larger and richer fruit—richer in that pulp which makes the colocynth valuable. But there is no object in thus improving the plant and its yield, as nature alone now supplies far more than the natives can find a market for.



The soil of this maritime plain is a light-brown loam, very rich, and almost without a stone. In places where the loam has been mixed with sand, the colocynth plant seems to thrive best. Very little rain falls on parts of this plain. The plant does not suffer from this lack of moisture. The climate is warm the year round, and during the summer months the heat is intense, so that the conditions necessary for the successful raising of the colocynth would seem to be a good soil, somewhat sandy, a warm climate, and little moisture.

The plant itself resembles our common cucumber, but its fruit is globose, about the size of an orange, of a light brown color. Its rind is smooth, thin, and parchment like. It is known as the Turkish colocynth, and is superior to the Spanish and Mogador varieties in the amount of pulp its fruit contains. The pulp constitutes 25 per cent of the fruit. The rind and seeds are valueless.

The fellaheen, or peasants, gather the fruit in July and August before it is quite ripe. It is sold to Jaffa dealers, who peel it and dry the pulp in the sun. It is then molded into irregular small balls, packed in boxes, and shipped mostly to England. The average annual shipment from Jaffa is 10,000 pounds, though this year's shipment amounted to only about 6,000 pounds. This quantity could be increased indefinitely if there were more demand for it and a price were paid that would make it an inducement for the peasants to gather and prepare it. The price now paid for the colocynth pulp, prepared, packed for shipment, and delivered on board the steamers in the port of Jaffa is about 30 cents a pound.

There seems to be no reason why the plant should not be successfully grown in certain parts of the United States. The soil and climatic conditions are certainly adapted to it.

EDWIN S. WALLACE,  
*Consul.*

JERUSALEM, *January 15, 1895.*

## PORT REGULATIONS AND TARIFF CHANGES IN PERU.

On January 9, 1895, President Caceres issued the following decrees concerning ports of entry and custom duties:

### PORTS OF ENTRY.

*First-class ports.*—Paita, Pimentel, Eten, Pacasmayo, Salaverry, Callao, Pisco, Mollendo, Ito, and Iquitos.

*Second-class ports.*—Tumbes, Talara, Chimbote, Samanco, Casma, Huacho, Cerro Azul, Tambo de Mora, Lomas, Chala, Morro de Sama, Puno for Lake Titicaca, and Letitia for the Amazon.

*Third-class (ports of supply).*—Zorritos, Mancora, Colan, Sechura, San José, Malabrigo, Huanchaco, San Bartolome de Chao, Guanape, Santa, Huarmey, Supe, Salinas de Huacho, Chancay, Ancon, Chilea y Mala, Salinas de Otuma, Atico, Quilca e Islay.

Custom-houses of the first, second, and third class, respectively, will be established at all the above-named ports.

Vessels of every nationality from every port or country, will be permitted to enter the principal ports, subject to the regulations provided by law. Peruvian or foreign vessels making regular or scheduled voyages, will be permitted to enter the minor ports and ports of supply (first and second classes), subject to the regulations prescribed by law.

By foreign vessels making regular or scheduled voyages, is meant vessels having fixed dates for entering port, with permission of the Government. Foreign vessels not in the above category, may enter ports of the second or third classes in ballast or freighted with domestic products, with permits from the administrator of a first-class port. When transporting foreign merchandise in transit for principal ports, such vessels will be permitted to proceed thither, when having aboard, at their cost, an employee of the customs service.

The administrators of the custom-houses of the first class, under proper regulations, and after collecting the duties thereon, are empowered to permit foreign vessels to disembark machinery destined for industrial development at ports of the second or third classes, or at other places on the coast.

The Government reserves the right to close ports of the second or third classes, to open other ports, and to establish custom-houses, when the necessity arises.

Owing to the exceptional situations of the minor ports of Tumbes, Puno, and Letitia, foreign vessels will be permitted to enter said ports, to dispatch their cargoes, subject to the regulations prescribed by law.

From and after February 1, 1895, in conformity with article 6, of the law of November 4, 1886, there will be collected from all transient foreign steam vessels a tax of 40 centavos per registered ton, 20 centavos per registered ton from foreign steam vessels making regular or scheduled voyages, and a like tax of 20 centavos from foreign sailing vessels.

Peruvian vessels will pay a tonnage tax of 10 centavos. The tonnage tax will be exacted at the first port entered and only once in a year, from and after January 1, 1895. This regulation is likewise applicable to Peruvian vessels of more than 200 registered tons.

Peruvian craft of less than 200 tons register, foreign vessels in distress, Peruvian or foreign vessels exclusively engaged in the coasting trade in Peru, foreign war vessels, and whaling vessels will be exempted from the tonnage tax.

All laws or regulations in conflict with the foregoing are abrogated.

#### CUSTOMS DUTIES.

From and after February 1, 1895, at all other ports, and April 1, 1895, at the port of Iquitos and dependencies, the following will be free from import duties:

Gold and silver ores and coins.

Saltpeter and other articles for agricultural uses.

Books and other publications, and paper of material other than satin.

Luggage accompanying and belonging to passengers, subject to the limitations prescribed by articles 122 and 123 of the commercial regulations.

Objects for religious use of the established church destined for a designated church or community.

Munitions for the use of practice societies.

Articles for the use of industrial organizations operating under contracts with the Government, subject to the limitations prescribed by law.

Tools or instruments for art or work, or for persons pursuing scientific professions, needed in such professions.

Implements or articles belonging to immigrants.

Objects used in the foreign mail service and by pursers of steamers, not exceeding in weight 250 grams.

Furniture and effects of resident foreign ministers, or for Peruvian ministers to foreign countries, during the exercise of their functions.

Machines for the use of fire companies.

Articles for the use of Descalzos monks, sanitary establishments, establishments for the care of orphans, or benevolent societies recognized by the Government.

Iron cans for the exportation of oils.

Articles for Government use.

*Merchandise.*—All other articles will pay specific duties, except such articles as are classed in the tariff to pay ad valorem duties.

Merchandise not enumerated in the tariff will be valued according to articles 43 and 128 of the tariff, as modified by resolution of August 12, 1869, the duty on such articles to be 40 per cent.

*Export dues.*—Export dues will be levied as follows on the following only:

Cotton, 1 mill per kilogram; rubber, 5 centavos per kilogram; leather, 5 centavos per kilogram; coca leaves, 1 mill per kilogram; fine rubber, 8 centavos per kilogram; alpaca and Vicuna wools, 2 centavos per kilogram; sheep and llama wools, 4 mills per kilogram; white palm and straw hats, 1 sol per dozen. A reduction of 50 per centum will be made on importations at the port of Iquitos and dependencies.

All regulations in conflict with the above decree are abrogated.

LEON JASTREMSKI,

*Consul.*

CALLAO, *January 12, 1895.*

## OPIUM DUTY IN PERU.

Minister McKenzie, under date of Lima, Peru, January 19, transmits to the Department a decree dated January 2, issued by the President of Peru, concerning the opium duty. The decree states that there being no bidder for the opium monopoly, and for the purpose of collecting the duty until the peace of the Republic is restored and a bidder (contractor) secured in order to reestablish the monopoly according to the supreme resolution of December 7, 1894, it is resolved that all opium now in possession of the contractors whose right has expired, also that held by retailers or holders of that article, shall, in Lima and Callao, from this date up to the 7th instant, be declared to the Government administrator to be named for the said purpose, and in other parts of the Republic to the agents whom this official may appoint, in order that the tax of 5 soles per kilogram may be collected.

All stocks of opium not declared will be confiscated, and a fine of 50 soles per kilogram will be imposed on the owners thereof.

The opium monopoly is suspended for the present, and the said article from this date can only be imported through the Callao custom-house on the payment of 15 soles per kilogram, the importers being at liberty, after making said payment, to send this article to any part of the Republic, accompanied by the certificate to be given at the Callao custom-house.

This resolution shall remain in force until peace is established in the Republic and the monopoly be again offered to public auction.

## COFFEE AND OTHER PRODUCTS OF PERU.

Richard B. Neill, esq., secretary of legation at Lima, sends the Department the following report upon the cultivation of coffee in Peru, which was written by Mr. James C. Gray, a citizen of the United States, for thirty-five years a resident in Peru, at the request of Minister McKenzie:

For the information of those who have not resided in the torrid zone, we will state that the degrees of heat and cold do not depend so much on the latitude as on the elevation above the sea; consequently, there is a great difference of temperature in places but a few miles distant from each other. Fifteen or 20 miles' travel will often take one from snow and ice to sugar cane and oranges, permitting the culture of every variety of plants in a short range of country. This should be borne in mind by those who think of settling in this country. Sugar cane, at an elevation of 3,000 feet, ripens in from twelve to fourteen months. Coffee produces well up to 5,000 feet, and less up to 7,000 feet, above the sea level, but of a superior quality in flavor, according to elevation. The entire country drained by the River Amazon and its tributaries is well adapted to the cultivation of sugar cane, rice, indigo, tobacco, coffee, cacao, coca, corn, sweet potatoes, oranges, pineapples, etc.

The south side of the Amazon River belonging to Peru is an immense forest, a great part being nearly level and intersected by almost innumerable rivers and creeks, most of them being navigable. The region known as the Grand Pajonal, comprising about 11,000 square miles, is bounded on the north by the River Pachitea, on the west by the Piechis and Arzupirzu, on the south by the Perené and Tambo, and on the east by the Ucayali. As the land is high in the center, with small rivers running out in all directions, it possesses a great variety of climate and considerable grass land in the highest parts, from which it derives its name "Pajonal." This section is particularly favorable to foreign colonists on account of its varied climate and its being quite environed and intersected by navigable rivers and creeks.

A part of the Paucartambo and Perené valleys have been ceded to the English company called the Peruvian Corporation. The cession comprises about 5,000,000 acres of diversified land, well timbered and watered. The company is actively engaged in opening roads, bridging rivers, and introducing colonists, who are planting coffee as a staple and other crops as auxiliaries. Corn ripens in about one hundred days, beans in seventy days, and rice in one hundred and fifty days. Rice is sown at the commencement of the rainy season—October or November—which generally lasts until the beginning of April. Then the chopping and burning season comes on, and the planting of general crops.

Coffee should be planted at the beginning of the rainy season—that is, the young plants should be transplanted from the nursery. It is a general practice to plant corn or maize to give shade for the young coffee plants. This should be done before transplanting the coffee plants. Coffee is generally planted too close here—6 feet. At present, some farmers set the plants in rows 8 or 9 feet wide and nearly the same distance in the row, which will give a good result in land which is not very fertile. Coffee trees will, under favorable conditions, produce a small crop the third year from transplanting and increase as the tree develops in size.

The coffee tree requires frequent pruning; all vertical shoots above a convenient height for harvesting should be cut off continually, preserving all horizontal branches. The Mocha coffee tree of Arabia is said to grow 45 feet high, and, when ripe, the berries are said to be shaken off. Here, it requires a good pull to take them from the branch, and if the plant is too high it is very inconvenient to harvest the berries, so it is best to keep the plant as low as possible. To form a coffee plantation, the first operation should be to make a nursery. The best mode of doing this is to clean off the underbrush in a shady place under large trees, rake over the ground, and scatter over the fresh, ripe coffee seeds, about 40 or 50 to the square foot.

Some prefer to crush the berries and separate the hulk from the seed, which is a good mode as each berry contains two seeds. In a year, the plants will be fit to transplant, being about 15 inches high.

Another mode is to dig small holes, where each tree should be, and put in two or three seeds, but it is very troublesome to keep the small plants clear from weeds. It also involves the loss of a year's time, as in having good nursery plants one or two years old, a plant may be put in in place of seeds. While the coffee plants are small, other things, such as beans, corn, manive (or yuca, as it is here called), may be profitably cultivated, and all are principal articles of food here. The manive is quite as good as the potato, or even superior, as an article of food, and is always ready and fresh, being dug daily as required. They can be used eight or ten months from planting and continue to grow as long as left in the ground. Sometimes one will reach 25 pounds. The stalk is broken in pieces and used for seed.

The plan adopted by the Peruvian Corporation is to open roads and give an easy communication to good land, assign a proper quantity to each settler, assist him with money, laborers, provisions, clothing, etc., until his farm produces. He then has twelve years to repay the expenses and the value of his land at one pound sterling per square of 100 meters in length and breadth, with 6 per cent interest yearly. They are opening roads down the Perené, and will probably soon, we hope, communicate with Europe by the rivers Tambo, Ucayali, and Amazonas, and so shorten the route by about 2,000 leagues.

Their contract with the Peruvian Government provides that all their colonists shall be foreigners. When their colonists reach 10,000, they can have another section separated from the first by an intervening section. This will be a serious drawback, and oblige them to open roads through land which they could not occupy, or remain isolated from each other, as there is no prospect of the Government opening roads down here. The part of Peru drained by the Amazon is more than 1,000,000 square miles, of the most fertile land on the globe, and is at present inhabited by about 80,000 souls, civilized and savages. The rivers swarm with fish, and the forests abound in game. There is a short and easy route to Europe, and no cold winter to paralyze farming operations, or frost to blight the crops. Planting is done at all seasons. One crop is harvested and another is immediately planted. The suffering poor of the Old World could luxuriate here.

Gutta-percha and gum elastic trees abound all through the country; also, black, and yellow walnut, mahogany, red cedar, some rosewood, ironwood, and numerous palm trees. Cacao grows wild. Sarsaparilla, bomonaje (of which the fine hats are made), and an infinite variety of trees and plants are also found. Gold exists at San Carlos, on the River Pachitea, and at San Matias, on the Palcasu. These places have been inaccessible for the last one hundred and fifty years on account of the hostile savages, but they are now accessible, as the Indians are not so hostile.

Salt mines exist in several places on the River Huallaga; also the "salt mountain, 18 miles from the town" of La Merced. This salt vein is said to extend 18 miles in length and supplies all the savages in this region.

Three miles below the junction of the rivers Chauchanayo and Paucartambo, there is an iron mine which has been worked for a great many years by the savages, who manufactured their tools from the iron which they produced from this mine. From 1740 to 1875, they were at war with the civilized race and allowed no one to enter their country. Being now at peace, they procure their iron and tools from the whites and have abandoned the mine, though still preserving their forges. I believe this to be the only iron mine ever known to be worked by Indians in South America. It was discovered by a party of one hundred and ten soldiers and civilians, in October, 1870. The writer was of the party and vouches for the truth of the fact, which is not generally known. The smelting furnace was 12 feet high, 2 feet interior diameter blast, supplied by four bellows of the Spanish pattern, one valve, and air pipes of wood with mouth pieces of clay. There were three smiths' forges in the establishment. All of the tools were of their own manufacture—anvils, sledges, hammers, tongs, etc. They manufactured axes, machetes, knives, fish hooks, etc.

The tide is felt 750 miles up the Amazon. Recently, an ocean steamer of 1,200 tons steamed up to Iquitos, 2,100 miles from the mouth of the river. From Iquitos to Port Pardo, on the Piechis, is 1,000 miles, being the highest point reached by Tucker in a steamer in 1873, and distant 70 miles from Chauchamayo and about the same by the rivers Tambo and Pirené to the rapids, which might be avoided by locks, enabling a vessel to come to within 10 miles of Chauchamayo.

An immense quantity of fish are salted and dried on the banks of the rivers for use, and exported to Brazil; also considerable quantity of beeswax. The principal business is the caoutchouc and gum elastic, cacao, etc.

The savages live by hunting, fishing, and farming. They spin and weave their own cloth when far from the white settlers. In hunting, they use a long blowpipe and very small poisoned darts; also, the bow and arrow 5 or 6 feet long. In fishing, they use an herb which, when bruised and thrown into the water kills or intoxicates the fish and they are taken by the hand. All tribes cultivate this plant, "Barbasco," which grows 8 feet high and resembles the Indigo plant in stalk and leaf. The seeds grow in pods and resemble small black beans one-eighth of an inch long. The poison used in hunting is prepared from two plants known by different names in different tribes. This poison is very active, producing paralysis of the nervous system, and does not injure the flesh for food. Turtles from 26 to 75 pounds weight, taken in great numbers, are kept in inclosed ponds and killed when required. Large quantities of turtle eggs are used for food and for making oil.

The coffee harvest here (Chauchamayo) begins in March and continues for six months. The ripe berries are generally put in heaps to sweat and to partly decay the pulp, which envelops the seed, which is the coffee. It is next spread in the sun for drying, five or six days being required to dry sufficiently for storing. The drying floors are generally made of stone and lime, in the open air. When well dried, the coffee can be kept a long time, but when hulled, it should be immediately sent away; otherwise, it turns white and loses in value. One mode of hulling is to use stampers driven by a water wheel, which cleans very well. Another mode is by a wooden mill turned by hand, which does not clean so well, and requires more hand labor. A few, only two or three, have introduced foreign machinery, which does good work though expensive and liable to get out of repair, which is a great defect, as we are so far from machine shops.

The quantity of coffee produced is according to the size and vigor of the plant, some yielding 4 or 5 pounds, and others not so many ounces. The total yield of coffee this year in this region is estimated at about 15,000 quintals. Next year it will be larger, as many new plants will produce.

As yet, no one having given his attention to the cultivation of cacao, no positive information can be given on that head. We know that the tree grows spontaneously from here to the Atlantic. The savages gather and sell a small quantity. No doubt a fine business could be done in that branch of industry as well as in tobacco, rice, and other products. This would be done by small proprietors who work their own land, as there are no laborers for large plantations, and they would have to be imported.

Speaking of this valley, Humboldt said, "It is here that the civilization of the globe will one day concentrate itself."

Nine-tenths of the agriculture and commerce in this section is done by foreigners. The exportation from Chauchamayo and Vitoc will be about the following, value per annum:

	Sols.*
Coffee.....	400,000
Product from cane.....	180,000
Tobacco and others.....	20,000
Black walnut and cedar lumber.....	2,000
Total.....	602,000

\*The Peruvian sol was valued by the United States Treasury Department at 46.4 cents on October 1, 1894.

The freight and taxes on the above to Tarma will be 134,200 soles, of which the taxes are 60,600 soles.

JAMES C. GRAY

October 4, 1894.

## CONDITION OF THE CUBAN SUGAR INDUSTRY.

I beg to call attention to the following from La Lucha of the 16th instant, containing a telegram addressed by the deputation of Matanzas, to Messrs. Romero, Giberga, and Amblard, the representatives of that province in the Cortes, now sitting at Madrid. This telegram expresses the apprehension that the Cuban sugar planters, from the low prices of sugar consequent upon its overproduction, may not be able to finish their present crop, and asks for the suspension of all taxes on the manufacture of sugar, and for its free admission into the Spanish market for one year. I also accompany a translation of the comments of La Lucha.

RAMON O. WILLIAMS,  
*Consul-General.*

HABANA, *February 18, 1895.*

### THE PROBLEM URGENT.

[Translated by Consul-General Williams from La Lucha, of February 16, 1895.]

The provincial deputation of Matanzas has addressed to the deputies of that province in the Cortes—Romero Robledo, Giberga, and Amblard—the following telegram:

"Matanzas deputation esteems sugar crisis most grave. Believes it impossible to finish crop. The suspension of all taxes on Cuban sugar with its free admission into peninsular markets for one year is therefore urgently necessary. I pray action.

"(Signed) GISPERT."

The situation reflected by this telegram is so exact that the corporations of all the sugar districts might express themselves in identical terms. Yes; the sugar crisis is most grave, and it is much to be feared that not only many planters will not be able to start grinding, but even a good part of those who have commenced may not be able to finish making their entire crops. Famous "centrals," that at this time of the year were accustomed to work night and day to be able to crush, within season, their supplies of the cane, are now working on one-third time, for the manufacturers can not afford to make thousands of bags of sugar solely for storage, nor can they make sugar at the present prices.

In consequence of this state of things, great anxiety prevails in the rural districts, for scarcity becomes greater day by day, and the hopes placed in the present state of things are being lost. Nobody pays. Customers do not satisfy their accounts at the country stores, nor can the latter meet their obligations with the merchants who supply them from the cities. And as all branches of business are linked together, the specter of bankruptcy appears now on the horizon.

We have been clamoring a long while for attention to the economic problem. But now that it may be considered that a new order of public administration is to be established, accepted, and enthusiastically defended by the three political parties of the island, it is to be expected that all the energy, all the activity, and all the passion ill spent in defense of political solutions over which there was disagreement, will now be devoted to the saving of our vital economic interests, since in that question, there is no essential discrepancy among us.

Preference can not be given to material interests over the principles of freedom and justice. But we believe that freedom and justice would not be comfortably seated on commercial ruin and social misery. On the contrary, it is in the perfect equilibrium of material welfare and of moral contentment where the happiness and progress of the people are to be found. Therefore, with all the force of sincere conviction, we address ourselves to the public authorities, in the hope that we will be heard, to say that the political reform having been made as desired by all the political parties, it is now necessary to commence at once to remedy the economic crisis. It is necessary to save the sugar and tobacco industries, if it is not wished that, on inaugurating the political reforms, they be received with cold indifference by a people distressed by hunger.

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The sugar growers of this consular district, as, in fact, throughout Cuba, are at the very beginning of the grinding season, in a most deplorable condition, and bankruptcy appears inevitable to nine-tenths of them. The very low price of sugar, centrifugals—selling to-day at  $1\frac{7}{8}$  cents per pound (Spanish gold), with indications of a further decline in prices—renders the situation so discouraging that some mills have ceased to grind. Within the past few days, one large planter has suspended, and others may have to do so for want of money to operate their mills. Holders sell only the amount compelled by their contracts—for money advanced for preparing the crop. They are anxiously awaiting the effect of the concessions made by Spain to the United States products imported into Cuba, and indulge the hope that Cuban sugars will, in some manner, be favored by the United States in compensation for the aforesaid concessions. Without some concessions, or an advance in price, another year will see a state of affairs, direful and disastrous, even with the most prosperous of Cuban planters.

At this season of the year, it has been usual for commercial houses in the United States to have quite a number of representatives here, soliciting business, but, under existing circumstances, they have, in my judgment, acted wisely in not now seeking the trade of Cuba; for, owing to the impoverished condition of the people, they can not, with safety, incur further obligations. This condition is verified by the almost daily suspension of some well-known firm.

WALTER B. BARKER,  
*Consul.*

SAGUA LA GRANDE, *February 12, 1895.*

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#### SUPPLEMENTARY REPORT.

Since my report of February 12 last, reporting the condition of the sugar crop, the weather has been so disastrous to the growing cane, preventing its being cut in due season, as to materially decrease the yield from estimates then made. This decrease is due to the winter and spring cane being hollow and containing very little saccharine matter. Many "centrals" report grinding the same amount of cane as last year, the result, in sugar, being

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25 per cent less. Many mills will finish their crop by April, as they consider it no profit either for them or their growers to grind the spring cane of 1894. This, together with the political agitation existing on the island, renders the condition of the sugar planters uncertain and discouraging.

WALTER B. BARKER,

*Consul.*

SAGUA LA GRANDE, *March 7, 1895.*

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## FINANCES OF CUBA.

With reference to the public debt of this island and other matters pertaining to its public administration, I inclose a translation of an editorial from *El Diario de la Marina*, organ of the Reform Party of Cuba, entitled "The Cuban Debt."

The statements of this editorial are instructive as to the amounts of certain annual budgets, their corresponding deficits, dates of royal decrees relating thereto, and mention of the approximate amount of the said debt, now estimated to exceed \$200,000,000.

As a fact suggestive of the manner in which the Spanish law governing the commercial relations of Cuba and Puerto Rico works against the Cuban treasury, about which this editorial complains, I accompany a slip and translation of a telegram dated yesterday at Madrid, stating that Mr. Vila y Vendrell had asked the Colonial Minister, in the Cortes, if it were true that a steamer from Puerto Rico had landed 40,000 bags of rice in the port of Habana as of peninsular production, when it was really from the East Indies, having been nationalized in Spain on payment of duties there, and admitted here free, with the loss of \$13,000 of duties rightfully belonging to the Cuban treasury. Yet the Cuban budget has to provide for the annual payment of about \$13,000,000 for account of the Cuban debt held in Europe, for which its income from customs duties is already mortgaged. Thus, Cuba has not only been made responsible for a debt not incurred in any public improvement or works, but is even deprived, in part, of the means destined for its payment.

RAMON O. WILLIAMS,

*Consul-General.*

HABANA, *February 21, 1895.*

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## THE CUBAN DEBT.

[Translated by Consul-General Williams from the *Diario de la Marina* of February 15, 1895.]

As a manifest and irrefutable demonstration of the imperative necessity of the reform of the Cuban tariff, and the repeal of the law governing the commercial relations of the Spanish West Indies, in such a manner as to increase the customs revenues of this island from imports both from the peninsula and foreign countries, giving the latter (*sic*) access to our ports, while maintaining always a fair protection in favor of those from the mother country, we

offered on the 2d instant the following terrifying picture and observations to the consideration of our readers :

Year.	Budget.	Income.	Deficit.
1884-85 .....	\$34,219,410	\$25,320,822	\$8,918,588
1885-86 .....	30,799,109	24,089,673	6,709,436
1886-87 .....	25,994,725	23,730,695	2,264,030
1887-88 .....	*25,164,781	20,173,311	4,991,470
1888-89 .....	*23,953,341	22,822,110	1,131,231
1890-91 .....	*24,650,331	23,190,231	1,460,100
1891-92 .....	*25,803,705	18,909,130	6,894,575
1892-93 .....	*24,925,615	20,068,520	4,857,095
1893-94 .....	*26,754,532	20,686,462	5,468,070
Total.....			42,694,575

\* Payments.

That is, during nine of the last ten years, the annual deficits amounted to the enormous sum of \$42,694,575, a sum which, with all certainty, will reach \$80,000,000, if the deficits from the year 1878 be added. This explains the scandalous growth of the public debt, with its increased interests and successive conversions, about all of which we propose to express our earnest opinion on a future occasion. Meanwhile, we limit ourselves to the query, Is this not enough to justify our advocacy of commencing a new system, whereby the present disorder may be stopped, together with these constant repetitions of annual deficits in the insular treasury?

Accordingly, we now present the following remarks, as explanatory of the frightful and progressive growth of the public debt of Cuba :

By royal decree of the 24th of August, 1878, an agreement, made the same day, between the Colonial Minister and the Spanish Colonial Bank of Barcelona, was approved for the negotiation, payment of interests, and redemption of the obligations of the treasury, with guaranty of the income from the customs duties of the island for the amount of \$25,000,000, distributed in one sole series, payable in Madrid, Habana, Paris, and London.

By another royal decree of the 31st of the same month of August, 1878, another agreement for the settlement, liquidation, and payment of the debt of the treasury of this island was made with the same bank. This and the previous agreement, called the "Elduayen settlement," were inserted in the Madrid Gazette of the 5th of September, 1878.

By another royal decree of the 10th of May, 1886, an issue of 1,240,000 mortgage bonds of the Island of Cuba of 500 pesetas each (\$124,000,000) was made under date of the 1st of June, payable at par in quarterly drawings within fifty years at most, from the 1st of July, all under the form and guaranties therein stipulated. This was published in the Madrid Gazette of the 12th of May, 1886. On the same day, another decree was published for the opening of a public subscription for the negotiation of 340,000 mortgage bonds of the Cuban treasury of the value of 170,000,000 pesetas (\$34,000,000) of those created by the previous decree.

By another royal decree of the 27th of September, 1890, the issue of 750,000,000 pesetas (\$150,000,000) mortgage bonds was ordered for the conversion of the debts of 1886 and 1882, for the payment and cancellation of the bills known as the "war issue," to pay the arrears due the army and to cancel the floating debt. A royal decree of the same date opened a public subscription for the negotiation of a part of those values. (See the Gazette of Madrid of the 29th of September, 1890.)

In the preamble of a royal decree of the 31st of December, 1891, Mr. Romero Robledo, the Colonial Minister, said :

"The evils springing from these constant deficits in the Cuban treasury can not continue but in grave detriment to that piece of our national soil, with closure of the door to its future

alleviation. To convince one's self of the urgency of a remedy, it suffices only to make a shallow examination of the economic changes undergone by that island in the course of a little more than twenty years, since it lost its condition of colony and entered the general system of administration and in the enjoyment of all the rights of the other Spanish provinces. Before this transformation, which opened for Cuba a new and important era, in the direction of strengthening each day its ties more and more with the mother country, the great Antille, so favored by nature, covered the necessities of its administration and poured into the lap of the national treasury the surpluses of its income. From that time, however, because of the excessive expenses imposed by the war against the enemies of the national integrity, and after the attainment of victory and peace, for reasons not easy and seasonable to examine at this moment, the treasury of Cuba has been lamentably and continuously unbalanced; its deficits threaten to be perpetual, and have enforced frequent financial operations to meet the emergency of the moment at the cost of the future, by reason of the postponement of obligations for a long series of years, without it being possible to determine the amount of the Cuban debt, which, however, can be said largely to exceed the imposing figure of \$154,000,000."

The minister was right when he said that it was not possible to determine the amount of the Cuban debt, and in adding that it largely exceeded \$154,000,000.

It is likely, in that computation, Mr. Romero Robledo did not include the \$34,000,000 negotiated by his predecessor, Mr. Fabie; and most certainly he did not calculate the deficit of the budget of his own formation nor those of the following ones, nor fix his attention on the fact that there daily appears some new credit for account of the budget of 1882.

The fact that neither at the Colonial Ministry, nor at the department of the insular treasury, nor at the branch of the Spanish Colonial Bank in this city, can anything be ascertained of the sum paid out by the island on account of capital and interests, nor of the amount of the Cuban debt, has brought on a surprise that now begins to assume the proportions of a public scandal.

It can be safely presumed that during the sixteen years of profound peace, the island has paid from \$120,000,000 to \$130,000,000, and that it still owes over \$200,000,000, double, perhaps, of what it owed at the termination of the war. What melancholy and disconsoling reflections arise from these results!

## AMERICAN FLOUR IN CUBA.

I have the honor to present the following as supplementary of my dispatch No. 2399\* of the 5th ultimo in response to the resolution of the Senate, asking for certain particulars regarding flour imported into this port.

In my No. 2399, above cited, I stated that the retail prices of flour had been too varied for quotation. If the resolution of the Senate is based upon the supposition that the retail of flour in Cuba is similar to its retail in the United States, then I misapprehended its meaning, for no such trade exists in Cuba. I do not exaggerate when I say that I have never known of a family in Cuba that cooks its bread within its own house, as is customary in the farmhouses, villages, towns, and cities of the United States, and pastry and pies are but little eaten here. This difference is founded on difference of climate and of customs. Accordingly, all bread is kneaded and baked in

\* Transmitted to Congress by the Secretary of State January 15, 1895, and printed as Senate Ex. Doc. No. 38, Fifty-third Congress, third session; text is given in this number, p. 561.

this island by the bakers. The only retail sale made of flour in Cuba is limited to such quantities as the cooks may need for the thickening of gravies, or for the making of a few tarts for the immediate meal. This limits the retail of flour to packages of a few ounces at most, in which market regularity of price is not observed; hence my report that the retail price was too varied for quotation. Therefore, the difference between the wholesale prices of flour, as sold by the importers to the bakers, and the prices of bread as sold by the bakers to the consumers, would seem to correspond to the requirement of the resolution. When the reciprocity treaty was in operation, the prices of bread ruled, according to quality, from 6 to 8 cents per pound; and after the suspension of the treaty, they rose from 8 to 10 cents approximately. It is to be remarked, however, that the bakers always make discounts in favor of restaurants, grocers, hospitals, the army and navy, and other public institutions, and, sometimes, give the Sunday ration free to families. Much irregularity prevails in the matter.

Under the fifth section of my dispatch No. 2399, I stated that during the last four months of the years 1892, 1893, and 1894, comprised in the resolution, the following quantities had been imported into Habana from the United States, there being no possible means of separating bags and barrels: In 1892, 156,110 bags; in 1893, 106,043 bags; and in 1894, 12,996 bags.

For reasons below stated, I can report that very little flour is now imported in barrels. Under the sixth division of the same dispatch, I stated that during the months of September, October, November, and December, 1894, the number of bags imported from other countries was 54,122. The bag, and not the barrel, is now considered here as the standard package of shipment. This change is wrought by the advantage bags have over barrels in the storage and in the stowing of cargo, resulting in cheaper cooperage and shipping expenses, as, also, in a saving of duties in the particular case of flour on about  $19.8 - 2.2 = 17.6$  pounds, the custom-house collecting duties on the gross and not on the net weight. A similar change has taken place in this island within the last twenty years in the packing of sugar, jute bags having been substituted for wooden boxes and hogsheads. Therefore, the number of barrels and bags imported into Habana from the United States can only be ascertained with numerical accuracy at the Bureau of Statistics of the United States Treasury Department, for the exports from there will be the imports here.

On this subject, I beg also to submit the following additional remarks:

While the reciprocity treaty was in force, all the flour, with the exception of the small amount in course of shipment from Spain when schedule B went into force, was brought by Cuba direct from the United States, and none from other countries, the treaty having removed, to a considerable degree, the obstacles of the nature of the tariff war interposed by the colonial and navigation laws of Spain on the commerce of her West Indian sugar islands with their natural and almost only consuming market, the United States.

To its extent, a normalization was wrought by the treaty in the commercial relations of Cuba and Puerto Rico with the United States; and for reasons that must be patent to all, not only did they buy all breadstuffs, but most of their sugar machinery, railroad stock, and many other farm and manufactured products direct from the United States.

Since the termination of the treaty, flour is imported here both from Spain and the United States, but none from other countries; for, owing to the differences of distance in the navigation from the mouths of the River Plate and St. Lawrence, and the ports of Galveston, New Orleans, Pensacola, Mobile, Richmond, Baltimore, and New York with respect to this island, flour can not be laid down here at such cheap rates of freight from the Argentine Republic and the Dominion of Canada as from the ports of the United States above-mentioned. Also, the exportation of flour from Canada to Cuba, with avoidance of the indirect route of the River St. Lawrence, is only practicable by transit through the territory of the United States to New York, or to some other port on our Atlantic and Gulf coasts, for deposit and export from bonded warehouse; but this would incur payment of storage and charges to the United States Treasury, together with transshipment expenses at the port of departure, which would likewise handicap it in its competition with American flour in the Cuban market. For similar reasons, flour can not be brought here from Chile nor southern Russia.

Therefore, Spain is the only country, besides the United States, that now sends flour to the islands of Cuba and Puerto Rico. But its importation from Spain is done in violation of the natural economic law, and at the expense of Cuba, by lessening the purchasing power of her exports in their exchange for her imports; for there is scarcely a vestige of natural economic tie remaining between these colonies and their mother country, statistics proving, particularly in the case of Cuba, that they have to send nearly all their exports for outlet to the United States, the beet sugar of Austria, Belgium, France, Germany, Holland, Russia, and other countries having excluded the cane sugars of all the West India islands, as well as those of Brazil and of the Hawaiian Islands from the markets of Europe, leaving them dependent on that of the United States.

In former dispatches, I pointed out the present commercial distress that had to overtake this island from the system of partial or unreciprocal protection implanted here by the mother country. This erroneous system of public administration is now becoming so manifest that all can see it, as shown by the exposition adopted on the 30th of November last by the Cuban sugar manufacturers and cane planters for presentation to the Parliament of Spain, transmitted with my dispatch of the 11th of last December\* and by the inclosed translations of articles from *La Lucha* of November 6, 1894; *Boletin Comercial*, of December 13, 1894; and *Diario de la Marina*, of the 2d instant, all leading organs of the public press of Habana. These pub-

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\* Printed in CONSULAR REPORTS No. 172 (January, 1895), p. 111.

lications will show that Spain does not produce wheat enough to leave a surplus of flour for exportation to other countries; and that to send flour to Cuba and Puerto Rico of her own milling, she must buy the wheat either in southern Russia or in the United States. She does this because, retaining the tariff-making power for the islands and putting the duties up high enough, she is enabled to run into the islands in her shipping, the flour milled at Santander, Bilbao, and Barcelona from foreign wheat, the navigation from Spain to the islands being held under her colonial system as coastwise, while the navigation from the colonies to Spain is treated on a footing with foreign trade. Under the same high-wall duties and her so-called coastwise trade, Spain is also enabled to bring American flour via the Peninsular ports to the islands. Only a few weeks ago, a newspaper of Matanzas called attention to the fact that a lot of flour had been landed at that port from Spain, with the miller's mark at Minneapolis, Minn., still on the bags. These publications will likewise convey to the Department samples of the public discontent prevailing here against the commercial subjection in which the island is still held by the mother country; for the effects are tantamount to a second bounty wrought by Spanish legislation in favor of all other sugar-producing countries against Cuba and Puerto Rico.

As further illustrating this system of partial protection, I inclose a *pro forma* account of the actual cost of the importation into Habana of 1,000 bags of American flour from New York via Barcelona, Spain. On the original cost of \$3,247.50 in the United States, this flour pays \$2,790 as charges in Spain, \$590 of which are spent in freight and lighterage, and the remaining \$2,200 goes into the treasury of Spain to the exclusion of the Cuban treasury. This is a bounty, as above stated, to the extent of the loss of purchasing power in the exchange of Cuba's exports for her imports, in favor of other sugar-producing countries; because Cuba buys this flour with the proceeds of her sugar sold in the United States. Besides, her treasury is deprived of the duties on her imports. From this point of view, the complaints of the public press of Habana are made readily intelligible.

I also inclose a *pro forma* account of 1,000 bags of flour brought direct from the United States, with duties calculated at \$4 per 100 kilograms, amounting to \$7,577.50, without commissions or insurance. Thus, the same flour brought via Spain costs \$679 less (\$7,577.50—\$6,898.50) than when brought direct from New York or New Orleans.

As another illustration, I append a pilot chart of the North Atlantic Ocean, issued by the Hydrographic Office of the Navy Department at Washington, on which I have roughly drawn with blue pencil a right-angled triangle, with its base line running due north and connecting Habana with a point about 30 minutes west of New York, and from thence the perpendicular to a point about due east to another near the port of Tarragona, in Spain, with its hypotenuse from hence to Habana. Now, Cuba, in this case, sells and buys at the two ends of this base line, but is forced by the mother country to transport this flour along the whole perpendicular, transship it at the apex,

and again transport it along the hypotenuse to Habana, with payment of the import duties in Spain, thus adding about 112 per cent to the original cost. But, unfortunately for mankind, so wasteful a system for the exchange of the products of human labor, carries within itself its own limitation; for just as Spanish legislation detracts from the buying power of Cuba's exports in the purchase of her imports, Spain favors the sugar producers of other countries by increasing their selling and buying powers in the general market in the same ratio, without disturbing in the least the equilibrium of the universal equation. Adam Smith compares the colonial system as practiced in his time, just previous to the independence of the United States, to a devouring beast.

With respect to the workings of the colonial commercial systems, I beg to call attention to three pamphlets, published at London in the year 1731, on the complaint presented by the English sugar planters in the West Indies to the British Parliament, against their fellow North American colonists; because the latter, after selling their cargoes to the English, sailed with the proceeds to the French islands—Guadaloupe, Haiti, and Martinique—to buy molasses where they could buy it cheapest, for distillation into rum, for supplying the trade of the fishing banks of Newfoundland. One of these writers, while complimentary to the people of Maryland and Virginia, invidiously remarks that the least of her sugar islands was of more value to Great Britain than all Rhode Island and Massachusetts put together. But that colonial system burst because not based on reciprocal action. Still, Great Britain tried to make another out of the fragments remaining to her; hence the complaint of the English planters of the year 1784, copy of which, taken from Anderson's History of Commerce, accompanied my dispatch of the 11th of last December.\* Still, nothing daunted in the hope of stopping the commercial dependence of her islands on the United States, Great Britain fitted out an expedition to the South Sea Islands to bring young breadfruit trees for planting in Jamaica and her other sugar islands, that their fruit might serve as a substitute for American flour; but this vain attempt to thwart the natural laws of commerce is now only memorable from the tragic mutiny of the *Bounty* in 1789, the romantic settlement of Pitcairn's Island, and the accidental discovery of its inhabitants in 1814 by the master of an American vessel. Brian Edwards, in his History of the West Indies, attributes the famine and the carrying to untimely graves of thousands of the inhabitants of Jamaica during the closing decade of the last century to this, then, restrictive commercial policy of Great Britain. But in time, economic necessity has endowed the English sugar islands, through British legislation, with the rights of freedom of commerce—the making of their own tariffs; and they now sell where they can get the most for their exports, and buy where they can get their imports cheapest.

As I am closing this report, the telegrams from Madrid announce that the Parliament of Spain, impelled, also, by the wisdom begotten of commer-

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\* Printed in CONSULAR REPORTS No. 172 (January, 1895), p. 116.

cial distress, is now about to adopt administrative and economic reforms for Cuba and Puerto Rico.

RAMON O. WILLIAMS,  
*Consul-General.\**

HABANA, *February 9, 1895.*

#### PRECEDING REPORT.

Consul-General Williams's dispatch of January 5, 1895, referred to in the foregoing, and transmitted to the Senate January 15,† is as follows:

I have the honor to acknowledge the receipt of the Department's instruction, No. 1017, of the 19th ultimo, inclosing copy of the Senate resolution of the 17th of the same month relative to the duty imposed on flour imported into Cuba from the United States and its prices in Habana before and after the 1st of September last, in answer to which I have the honor to report as follows:

First. The rates of duties on flour and other breadstuffs imported from the United States under the recent reciprocity treaty, up to the 28th of August last, the date of the termination of said treaty, were as follows:

[Spanish gold per 100 kilograms.]

Wheat.....	\$0. 30
Flour.....	1. 00
Corn.....	.25
Meal.....	.25

Besides, there was levied a wharfage charge of 25 cents per ton on the above articles, in favor of the board of Habana harbor works.

Second. Since the above-stated date of August 28 last, on the going into force of the tariff of the United States, and consequent termination of the reciprocity treaty between the United States and Spain for Cuba, flour and other breadstuffs of the United States became thereon subject to the highest and following duties of the Cuban tariff:

[Spanish gold per 100 kilograms.]

Wheat.....	\$3 95
Flour.....	4. 75
Corn.....	3. 95
Meal.....	4.75

All these articles, from whatever country, pay in addition \$1 per ton for unloading to the insular treasury and 25 cents to the board of Habana harbor works.

Third. The retail prices have been too varied for quotation. The average wholesale prices of flour during the twelve months preceding the 28th of August, 1894, were from \$4.25 to \$6.75 per bag, according to quality.

Fourth. The average wholesale prices of flour from the 28th of August, 1894, to date have been from \$5.40 to \$8.50 per bag, according to quality.

Fifth. The number of bags of flour imported into Habana from the United States during the last four months of the years 1892, 1893, and 1894 are as follows:

	Bags.
1892.....	156,110
1893.....	105,043
1894.....	12,995

\*Inclosures mentioned have been filed in the Department of State

†Senate Ex. Doc No. 38, Fifty-third Congress, third session.



Sixth. During the months of September, October, November, and December of 1894, the number of bags of flour imported into Habana from other countries than the United States has been 54,122 bags.

Seventh. Under the present Cuban tariff the following are the rates of duties per 100 kilograms collected on flour and other breadstuffs from different countries, the highest being levied on the products of the United States:

Description.	From United States, not having commercial agreement with Spain.	From Canada and other countries having commercial agreements with Spain.
Wheat.....	\$3.95	\$3.15
Flour.....	4.75	4.00
Corn.....	3.95	3.15
Meal.....	4.75	4.00

From Spain all are free, trade from the mother country to Cuba being considered as coast-wise; but not so from Cuba to the mother country.

I accompany copy of and translation of the order of the intendant-general, dated the 28th of August, 1894, imposing the highest rates of duties of the Cuban tariff, with its special imposts, on all merchandise and products of the United States, from that date inclusive.

It is to be observed, however, that the increased duties imposed on American breadstuffs since the 28th of August, 1894, have not been imposed by Spanish legislation had subsequent to that date, but under the present Cuban tariff, which went into operation simultaneously with the definite reciprocity treaty between the United States and Spain for Cuba on the 1st of July, 1892, which tariff subjects the merchandise of all countries not having commercial treaties with Spain to the duties of its first column.

In conclusion, I beg to observe that there is no bureau of statistics attached to the Cuban Government, and that the statistics herein given are collected from and collated with private sources.

RAMON O. WILLIAMS,  
*Consul-General.*

[Inclosure 1 in No. 2399—Translation.]

INTENDANCY-GENERAL OF THE TREASURY,  
*Habana, August 28, 1894.*

This intendancy-general, complying with telegraphic orders from His Excellency the Minister for the Colonies, directs that the new tariff of the United States having gone into force on this same date, the merchandise and products of that country be appraised from this date under column 1 of the tariff of this island with the collection besides of all special imposts.

God guard you many years.

MIGUEL CABAZAS.

To the collector of ———.

## NEW TARIFF FOR CUBA AND PUERTO RICO.

Since the date of the preceding report, the Spanish Cortes has passed and the Spanish Government has proclaimed a new law placing the United States in the second column of the Spanish tariff for Cuba and Puerto Rico,

and admitting products of the United States into those islands at lower rates. Following is a translation of the royal decree promulgating the law as published in the *Gaceta de Madrid* of February 6, 1895:

The Government is authorized to apply to the products and manufactures of the United States which, coming from the ports of the United States, may be admitted into the ports of Cuba and Puerto Rico, the second tariff of the duties in force in them, in return for the United States applying their lowest duties to the products of the soil and of the industry of Cuba and Puerto Rico.

This *modus vivendi* shall be in force until the conclusion of a permanent treaty between the two parties concerned, or until one of them announces, three months in advance, the day on which it wishes to put an end to it.

The diplomatic correspondence leading up to this action of the Spanish Government was transmitted to Congress in a special message from the President, February 7, 1895, and was printed as Ex. Doc. No. 58, Fifty-third Congress, third session.

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### NEW TAX LAW FOR CUBA.

Following is a translation of a new tax law for Cuba, published in the *Gaceta de Madrid*, of February 21, 1895:

ARTICLE 1. The industrial tax on the manufacture of sugar in the island of Cuba, created by the law of June 30, 1892, and amended by article 13 of the law of August 6, 1893, is abolished in the present schedule (*ejercicio*).

ART. 2. The present export duty on sugars of all classes and on clarified honeys of the said island is reduced 25 per cent.

ART. 3. A tax of one per cent is levied on all payments made as charges upon the credits contained in the budgets of the State, of the provincial deputations, of the city councils (*ayuntamientos*), and harbor works. Excepted from this tax are payments on the debts expressly excepted by the law of its creation and liquidation, those relating to contracts concluded prior to this law, the pay of soldiers of the army and seamen of the navy, the pay of volunteers and firemen, and the wages of workmen employed by the administration.

ART. 4. A temporary tax of 10 per cent is levied on articles of eating, drinking, and burning, excepting wine, natural cider, chocolate, alimentary conserves, and preserved meats produced in, and coming from, the peninsula (Spain).

ART. 5. The temporary tax of 10 per cent on all other articles is raised to 15 per cent.

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### LOADING TAX ON SPANISH IRON ORE.

I have had inquiry made at the custom-house at Madrid concerning the allegations made by Mr. Frank Samuel, of Philadelphia, as to a new export tax of 2 pesetas on iron ore exported to the United States. I am told that this statement is incorrect. There is a loading tax on iron ore exported to all countries, imposed without discrimination, and of the following character: First class, 50 centimes; second class, 25 centimes; third class, 10 centimes.

I am told that the classification depends upon the distance over which the ore is to be transported, and upon other conditions explained in the customs regulations.

HANNIS TAYLOR,  
*Minister.*

MADRID, *February 28, 1895.*

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## TELEGRAPH SERVICE OF GREAT BRITAIN.

On the 29th of January last, a banquet was given in London by the telegraph employees of England, the director-general of posts and telegraphs presiding, to celebrate the twenty-fifth anniversary of the control and operation by the State of the telegraph lines of Great Britain. Until the 29th of January, 1870, the telegraph service was performed by separate companies, some of these independent, and others working in conjunction with the various railroad lines. On that date, all of the telegraph lines of the United Kingdom were acquired to the State by purchase, at a total cost of £11,000,000 (\$53,526,000).

This is one of the many measures that the English people owe to Mr. Gladstone, who, inspired by Baines, the promoter of the idea, advocated the purchase with energy and intelligence, citing statistics and figures which convinced the people of the necessity of such an important service being under the direct control of the State.

In the beginning, the task of combining both services, that of posts and telegraphs, which, until then, had been separate, and of organizing them together, was a rude one. The telegraph lines had no connection between themselves, each company having freely extended its wires to those points which appeared most lucrative, without considering any but its own interests. The consequence was that entire districts, on account of their distance from these lines, were entirely devoid of telegraphic facilities, and many important towns, situated in zones appropriated to particular companies only communicated between themselves in a roundabout way, and badly at that, owing to the preference that each company gave to its natural clients.

The State had to treat all districts alike, without preferences or privileges, and this work of connecting the various lines, and, above all, of extending the service to those towns which had not possessed it, was so great that from October, 1870, to October, 1871, 15,000 miles of wire was put up, necessitating 15,000 new batteries and about 3,500 additional apparatus. This colossal task was intrusted to the employees of posts and telegraphs, and the work was pushed with unflagging energy, without resting either day or night, and was completed in an incredibly short space of time.

We shall now see the results of this change of the telegraph service from the hands of private companies into those of the State. During the year

1870—the year of the purchase—the total number of telegrams handled weekly by all the offices in the United Kingdom is estimated at from 128,000 to 215,000. In 1893, this total exceeded 1,100,000. The annual total, which, in 1870, did not reach 7,000,000, exceeded 70,000,000 in 1893. The increase of the press service has even been larger than that of individuals. In the year 1869, the English press sent by telegraph 22,000,000 words; the number of words which are now sent annually by the newspapers exceeds 600,000,000—thirty times more than formerly. The present tariff for the press, it is true, is very small as compared with that of 1870, and the automatic apparatus which, in 1870, could only send at the rate of 75 words a minute, now sends 500 a minute; and besides, at that time, it was only possible to send a single telegram on each wire in the same direction, while at present five or six are sent on the same wire simultaneously. Thus, the transmissive power of the lines has been increased sixfold, with only a slight modification of the instruments.

In 1870, it was calculated that it was possible to send 500 telegrams daily between the different districts of London, while to-day the number of telegrams sent between the different districts of London varies from 20,000 to 30,000. The telegraph is employed in London for all the small and necessary details of life—to announce that you are going to dine at a certain house, or to inform your wife that you have to attend a sudden meeting of the shareholders of the railroad, etc.

The service is performed with the most perfect punctuality. It is calculated that the average time employed to-day in the transmission of a telegram between two commercial cities of England varies from seven to nine minutes, while in 1870 two or three hours were necessary.

Telegrams may be sent to all parts of the United Kingdom at the rate of 12 cents for the first twelve words (minimum charge), and one cent for every additional word, stamps in payment to be affixed to the form by the sender. The address of the receiver is charged for, but not that of the sender when written on the back of the telegraph form. Five figures are counted as one word; so is a letter preceding or following a group of figures. The charge includes delivery within the town postal limits, or within one mile of a head office; beyond that limit the charge is 12 cents per mile.

The annual revenue which the treasury derives from the combined services of posts and telegraphs in England amounts to £2,750,000 (\$13,431,500), it not being possible to ascertain the amount derived from each service separately, according to the statement made by Mr. Shaw Lefevre, who occupied the post of director-general of posts and telegraphs in the administration of Mr. Gladstone.

The English Government does not consider the telegraph service as a means of revenue for the treasury, but as a means of information for the whole country, giving facilities of all kinds for its use and extension in all

the social classes; for, in favoring the increase of trade by this instrument of progress, it well knows that the treasury will benefit indirectly from the augmentation of the general wealth.

HENRY W. MARTIN,  
*Consular Clerk.*

SOUTHAMPTON, *February 4, 1895.*

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## CONGRESS OF RUSSIAN MILLERS.

The Russian millers recently held a largely attended meeting in this city (St. Petersburg), discussing some very important questions relating to the milling industry and the export of its products. Our country being largely interested, and as anxious as any other country to dispose of her surplus of like products, I have made a report in brief of their doings, which I believe may interest the millers of the United States.

From the action of the Russian millers, it may be seen that they believe that social intercourse is an excellent basis upon which to found work of practical benefit. They met in this city on the 24th of last January in large numbers to discuss the question how to improve or reform the milling industry. The meeting was held under the auspices of the Russian Government which wishes to foster the export trade of Russian mills. After the meeting had been organized, the following questions were suggested for consideration: The cost of producing flour; the expenses paid in ports when trading with foreign countries; what is gained by selling bran, and the credits from the Government bank.

The question concerning the cost of producing flour created great discussion, but finally it was agreed, taking the smallest expenses into consideration, that it costs from 3 to 11 cents to manufacture one bushel of wheat into flour. The expenses at ports, including railway freights, were figured at from six-tenths of one cent to  $1\frac{3}{4}$  cents per 36 pounds of flour, or pood, as the Russians call it.

Regarding the expenses of selling flour abroad, the opinions differed. It was stated that such expenses amounted to from three-fourths of one cent to 1.1 cents per each 36 pounds, which is generally paid to brokers. Some of the members were of the opinion that by having agents abroad the services of brokers could be dispensed with, but the majority decided that without the brokers it would be quite impossible to trade in foreign countries, and it was stated that America had tried to deal directly with the consumers and was unsuccessful in her attempts.

It has been shown that bran, on account of the low price, is used for fuel, and the congress was asked to take all possible steps to find a market for it abroad, and try to have special freight rates allowed.

A recommendation was adopted that the association ask the Government bank to augment and facilitate its credits on flour, because if a large export

trade of flour should be established—and that was considered indispensable—a large amount of money would be necessary. As to the mode of loans, many different opinions were expressed. A suggestion was made to divide loans into two categories—loans on mills and machinery for floating capital, and loans against grain and flour. As to the loans on flour for export, a majority of the members were of the opinion that 75 per cent should be allowed, and the rate of interest at  $4\frac{1}{2}$  per cent, which is now charged in the banks, was considered satisfactory. An argument was advanced that, to cheapen the production of flour, an increase of the same was necessary, together with a reduction of the number of the different grades of flour.

The committee of the technical division under the presidency of the vice-director of the Department of Trade and Manufactures, recommended that the duties on machinery, which can not be so successfully manufactured in Russia as abroad, should be reduced, and also on silk sieves and the like. Further, they examined into the question of organizing millers' schools in Russia, and made a very interesting communication on this subject. They informed the members as to the organization of such schools in the west. For instance, in England, there are such schools with a six-months' course; in Germany, from four to five half-year courses having a technico-practical character. In Paris, there is a millers' school conducted on a different plan. The pupils are kept at work in the mills. Every year, at this school, meetings and lectures are held for the pupils, and milling machinery is exhibited.

A description of the organization and programme of the millers' school for children in Moscow was given, and millers' schools were recommended for grown people and not for children, which should be sustained by the Ministry of Finance.

Different propositions were advanced, with long discussions, for an organization of a Russian millers' alliance to further the flour export trade, and finally it was agreed that, for competition in the foreign markets, an assimilation of the Russian millers and an organization of a central bureau at St. Petersburg, with councils divided in sections, such as in the Volga region, Black Sea ports, Baltic ports region, in Central Russia, Vistula region, and western region, were indispensable. The principal duties of the bureau are to be as follows: To gather all the necessary information concerning the milling industry in Russia; to examine into and decide questions relating thereto; to take part in all meetings relating to the flour trade and millers' interests; to give information to millers as they should require it, or as the bureau sees fit to impart; to collect information from mills, and to post the Ministry of Finance concerning the industry; to watch the movement of the trade in flour products in foreign markets; to make analyses of the products; in short, the aim of the bureau is to create a central organ, which would attend to the interests of the Russian millers and unify them. The association is to be composed of all persons having an interest in the

milling industry and trade, such as proprietors of mills, millers, grain, and flour dealers, etc.

It was suggested that what was necessary for the facilitation of the export of Russian flour was an extension of credits both for mills and milling products; quick transportation, and efforts to acquaint foreign consumers with Russian flour, to establish special commercial agencies and depots where necessary. It was also proposed that efforts should be made to supply the following countries with Russian flour: England, Asia, Egypt, and the borders of the Black and Mediterranean seas.

Before the congress adjourned, the director of the department of railway communications informed the assembly that if an association of millers is organized, reductions and immunities will be granted them. A representative of the Government bank informed the congress that their suggestions concerning loans on millers' products will be examined as soon as possible, and will be presented to the Minister of Finance for confirmation. On the last day of the meeting (February 2), a committee was appointed which was charged with the work of preparing rules and regulations for the intended organization. It is to have a project worked out by the 1st of April next of all that has been recommended, and as soon as completed it will send copies to all Russian millers for their consideration. The meeting was adjourned to the 5th of May, 1895.

JOHN KAREL,  
*Consul-General.*

ST. PETERSBURG, *February 4, 1895.*

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## AMERICAN VS. EUROPEAN FLOUR MILLS.

The reports which the French delegates to the Chicago World's Fair have furnished on mills in the United States contain, as the Genie Civil remarks, much that will be advantageous to European undertakings of a similar nature. The journal quoted summarizes the principal differences between the systems of milling in the Old and the New Worlds as follows:

Above all, the American mill is characterized by the high perfection to which the automatic working has been brought. Every part of the work, down to filling the flour into the barrels, is done by machinery to the exclusion of human labor wherever possible. The mills now employ only chilled-steel rollers, porcelain rollers having been entirely abandoned, owing to their high first cost and the difficulty of keeping them in order. In contrast with the Hungarian system, the grain is not first crushed in a special mill, but at once ground as perfectly as possible. The miller's endeavor is to obtain a minimum of flour with a maximum of middlings. All the mills which work for export grind mixed sorts of wheat. As the grains are of very different sizes, the mixture first runs through a pair of rollers which let the smaller grains through, and, crushing the larger, feed the next pair with an almost uniform product. The purifiers are also remarkable for producing no dust; this result is attained by always letting the same air pass through the machine, a small quantity of fresh air being, of course, always added to take the place of that which has been carried away. The air thus

circulates continuously in the purifiers, and, unlike European mills, there is no emission of 20 to 30 per cent of dust, which either falls back into the machinery or distributes itself over the neighborhood. It is also of importance that this arrangement, in foggy weather, prevents the suction of air saturated with smoke, which, instead of purifying, only fouls the grain.

THEO. M. STEPHAN,

*Consul.*

ANNABERG, *January 19, 1895.*

## TOBACCO PLANTING IN GERMANY.

The new tobacco-tax bill now before the Imperial Diet will be the subject of hot discussion, and it is far from certain that the bill will become law in its present form. But it is well known that the announcement of a bill for the increased taxation of any product, like the threat of an increase in the customs tariff, leads the persons affected to take steps to secure themselves the greatest possible advantages in advance. From this point of view, the figures relating to the planting of tobacco and the tobacco crop in the crop year 1893-94 compared with the year 1892-93, and the estimated figures for 1894-95 are very instructive.

Crop year.	Planters	Land planted with tobacco.	
		Farms.	Extent.
			<i>Acres.</i>
1892-93.....	145,147	196,476	36,384
1893-94.....	141,725	195,647	37,536
1894-95.....	152,224	216,194	43,422

While the number of tobacco planters for 1893-94, as compared with 1892-93, and also the number of tobacco farms, had somewhat decreased, the area of the land planted with tobacco continued to be greater than in 1892-93, and the crop was also proportionately larger (in 1892-93, 33,454 tons; in 1893-94, 35,333 tons), it seems from the provisional statistics that in 1894-95 there has been an increase in the number of planters as well as in the number and area of farms. This increase is certainly surprising, and it is noticeable that in every district the area of the farms with tobacco has become larger. Brandenburg had 419 acres; Pomerania, 198 acres; Hanover, 189 acres; Bavaria, 1,481 acres; Baden, 2,304 acres; Hesse, 297 acres; and Alsace-Lorraine, 421 acres more of tobacco farms in 1894 than in 1893.

THEO. M. STEPHAN,

*Consul.*

ANNABERG, *January 25, 1895.*

No. 175—8.



## EXHIBITION AT LÜBECK.

Under the patronage of the senate of Lübeck, a German and North European exhibition of commerce and industry is to be held in that town from the 1st of July to the 30th of September, 1895. The exhibition is intended to present a complete view of the export and import trade between Germany and the countries of northern Europe, Russia, Finland, Sweden, Norway, and Denmark, with the special object of rendering practically useful the commercial treaty concluded for a term of ten years between Germany and Russia. At the same time, all raw materials and finished products exchanged by the agency of Germany are admissible. To assure financial success, a guaranty fund of 400,000 marks has been subscribed by the government of Lübeck, the merchants, and private persons. The location selected for the exhibition is the building site by the great water basin of the Wakenitz.

The wide range covered by the exhibition will be seen from the following list of groups: (1) Mining, founding, and salt works; (2) chemical industry; (3) china, earthenware, and glass goods; (4) agriculture and forestry, with their products, the substances and other auxiliaries employed, dairies with their machinery and apparatus, and bee keeping; (5) gardening; (6) foods and drinks; (7) tobacco and cigars and their manufacturing plant; (8) textiles and clothing; (9) wood and wood ware; (10) hardware; (11) metal ware; (12) paper goods; (13) leather and india-rubber goods; (14) architecture and engineering, including designs; (15) shipbuilding and ship furnishings; (16) machinery, electro-technics, and means of transportation; (17) graphic arts and industrial designing; (18) scientific instruments; (19) hygiene, sanitary arrangements, fire extinguishing and life saving, and public health; (20) musical instruments; (21) education; (22) women's work and home industry; (23) commercial exhibition, raw materials and their utilization; (24) fishery; (25) sport in all branches.

THEO. M. STEPHAN,

*Consul.*

ANNABERG, *January 19, 1895.*

## GERMAN CONSULS AIDING TRADE.

As a sequel to my former report entitled "German Consuls and German Trade,"\* which was reproduced and commented upon by a large number of foreign journals, I send the following as to a further measure undertaken by the German Government in the interest of its export trade to the United

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\* Printed in CONSULAR REPORTS No. 166 (July, 1884), p. 458.

States. A number of leading German newspapers published the following notice in their last issue :

The director of the commercial department of the German consulate at Chicago will pay an official visit to his native country (Germany) in March or April of this year for the purpose of delivering a number of addresses on the subject of commercial relations in the United States—in particular, the great opportunities offered for effecting an increase in the export of German merchandise to that country. Business branches and firms in search of new markets for disposing of their wares who desire to receive information regarding business affairs in America, should address themselves to the commercial department of the consulate at Chicago.

From the above, it is clearly evident that the innovation made by the German Government in its consular service, has already passed through the state of probation and is now a well established fact, being recognized as such by the chambers of commerce of the great industrial centers. There is no doubt but that the German consuls by profession—the appointment of honorary consular officers now being gradually on the decline in Germany—are to be regarded as the foremost pioneers in the service of German commerce. In this connection, however, it must not be forgotten that they are aided in their efforts by the various industrial branches themselves, whereas American consular officers receive but little support of that nature. As long as American firms, whose products would, in all probability, find a ready sale in European markets, fail to secure such territory by means of capable representatives, the unaided efforts of a consular officer will meet with but small success. The present severe winter in Germany has, for example, convinced me that our American manufacturers of rubber and gutta-percha articles, such as shoes, coats, etc., could compete successfully with the Russian and English manufacturers now controlling the market for such goods, and thus add a large source of demand, provided they adapt their products, at least partially, to suit the taste of the German public, and commission competent representatives to call the attention of the trade here to such merchandise.

I shall report in detail on the chances offered the industry named in Germany. At the present time, I only desire to supplement my former communication regarding the interesting innovation made in the German consular service.

LOUIS STERN,  
*Commercial Agent.*

BAMBERG, *February 14, 1895.*

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## HINTS TO GERMAN EXPORTERS.

That the German Government has long been striving in every way to push the merchants of Germany into new fields of trade and strengthen their hands in the old is no news to you ; but it may be interesting to learn how they regard the United States as a field for German machines and what counsel German manufacturers and exporters are now receiving from officials in order to fit them better to extend their trade in North America.

The Berliner Tageblatt of February 26 gives, as from official sources, the article which I inclose and for which I have the honor to supply the following translation :

#### HINTS TO GERMAN EXPORTERS TO THE UNITED STATES.

From a competent authority, the following hints are given for the German export trade to the United States.

Written information in German handwriting is incomprehensible to Americans; moreover, the letters sent over are very often illegible and difficult to read. The American business man who has been accustomed for years to receive all the letters addressed to him in clean and plain print, is little inclined to spend so much time and trouble, and is also easily disposed to think poorly of a business house that uses what seems to him the old-fashioned, behind-the-age methods of communication by handwriting. It is therefore recommended to German business men to use the typewriter.

For the sale of staple articles which are not subject to changes of fashion, agents are easily found. For articles, however, which meet with American competition, the introduction of which requires great pains and sacrifices, agents are difficult to find. Therefore, it is recommended to such firms as desire to export such articles, to give a corresponding compensation.

A large number of German industrial products, especially machines, instruments, etc., should only be imported into America when the German manufacturers have established sales rooms and storehouses in the districts where such goods are to be offered for sale.

One should not be surprised if the American firms prefer to give their orders to the home manufacturers unless the above condition has been fulfilled, even if ready to take the German manufacture on account of its superiority, as is especially the case with machinery for textile manufactures.

It is indispensable that German exporters should adapt the products desired for America to the taste and demands of the country.

The presumption is to be characterized as false that an article which is better and more practical than a similar article manufactured in America has the better prospect of an extended sale there. Such a prospect is only for such goods as answer best and most generally the requirements and customs that obtain in the United States. The same is true with regard to the management of the necessary arrangements that are to lead up to business relations.

In the making of prices, the widely developed credit system of the United States must be kept in mind and the long duration of credits. Prices must be so calculated as to include packing, forwarding, insurance, and all other expenses on the spot in American seaports and the same clearly set forth.

In calculating the commission to be given agents, it must be considered that travel, office, selling, and storehouse charges, as well as salaries, etc., are much higher in the United States than in Europe.

It is also necessary to furnish agents with free catalogues, samples, and advertising articles, since American rivals spend large sums for such purposes. If it is not possible to send samples, it is desirable that the agent should receive sample goods for his use.

And it is also recommended that, like the American manufacturer of machines, instruments, etc., the German firm should offer to parties interested its own articles for a trial of their powers. It is true that the great expenses connected therewith make this proposal very difficult to follow.

Finally, it is strongly recommended that exporters should pack their goods with care and consideration, because American railways treat the goods they carry with very little care.

However gratifying it may be when our exporters receive such advices from official sources, yet we would beg to remark that all such counsel will be useless if our Government

shall be driven by agrarian influences to risk our commercial relations with the world in general, but especially with the United States.

I may add that a German consul-general established at one of our greatest American cities has offered to return to Germany and hold conferences with and give lectures before various chambers of commerce on the best means to push German trade with the United States.

CHARLES DE KAY,  
*Consul-General.*

BERLIN, *March 1, 1895.*

## BRAZILIAN VESSELS FOR COASTWISE TRADE.

I transmit a copy and translation of décret No. 227 of December 5, 1894, postponing for two years the operation of decree No. 123, of November 1, 1892, which limits the coastwise trade of Brazil to Brazilian bottoms. I also transmit a copy and translation of the decree No. 123. You will observe that this trade will, upon the operation of the decree, be practically confined to vessels flying the Brazilian flag, except in the instances mentioned in articles 4 and 5. These exceptions are the transportation of goods belonging to the Government; transportation of passengers and their baggage, animals, valuable parcels, perishable agricultural and manufactured products, and coin; to bring aid in cases of famine or pestilence; to trade generally in cases of foreign war. Foreign vessels are also permitted to enter ports for shelter or asylum, to discharge portions of a cargo at several ports, to take on cargo at several ports, and sell a cargo in cases of distress, shipwreck, or *vis major*.

THOMAS L. THOMPSON,  
*Minister.*

PETROPOLIS, *January 27, 1895.*

### DECREE NO. 123 OF NOVEMBER 11, 1892, REGULATING COASTWISE NAVIGATION.

[Translation.]

ARTICLE 1. Coastwise navigation can only be carried on in national vessels.

ART. 2. By coastwise navigation is meant direct communication or trade between the ports of the Republic, within its waters, and of the rivers that flow through its territory.

ART. 3. In order that a ship may be considered national, it is necessary (1) that it be the property of a Brazilian citizen or of a company or corporation with seat in Brazil, managed entirely by Brazilian citizens; (2) that it be navigated by a Brazilian captain or master; (3) that at least two-thirds of its crew be Brazilians.

ART. 4. Foreign vessels are prohibited from entering in the coastwise trade, under penalty of confiscation, but are permitted (1) to load or unload merchandise and articles belonging to the Government; (2) to enter a port for asylum and to leave for another with its cargo within a designated time; (3) to enter a port, with a full cargo, and to leave for another with the same entire cargo or with part of it dispatched for consumption or reexportation; (4) to transport from one port to another of the Republic passengers of any class, their baggage,

animals, and packages classified as valuable or perishable agricultural and manufactured products and coined valuables; (5) to receive from any or all the ports of the Republic manufactured goods or produce of the country for the purpose of exportation; (6) to bring aid to any state or point of the Republic in cases of famine, pestilence, or other calamity; (7) to carry any kind of cargo from one port to another of the Republic in cases of foreign war, internal commotion, injuries, and prejudice happening to national navigation and trade by cruisers and foreign forces, even if war has not been declared.

ART. 5. Merchandise taken from a port of the Republic can be sold in another, in cases of distress, shipwreck, or *vis major*.<sup>•</sup>

ART. 6. The vessels of neighboring countries are permitted to navigate the rivers and interior waters according to the terms of the conventions and treaties.

ART. 7. Upon the enrollment of the vessels and crews, they will observe the rules of navigation and inspection which are designated in the regulation that the Executive power formulates for the execution of this law.

ART. 8. For five years after the publication of this law, the matriculation of all the personnel of the merchant marine is gratuitous, except the necessary stamps.

ART. 9. National vessels are obliged to have an inspection of the bottoms and machinery every six months, having the pipe and boilers subjected to a water pressure, and once a year the same inspection in a dry dock. These inspections will be gratuitous and should be requested from the proper department by the proprietors, with eight days' notice; they can be made in any of the ports of the Republic designated in the regulation which will shortly be expedited.

ART. 10. The provisions of this law will not take effect until two years after the publication.

ART. 11. All provisions to the contrary are revoked.

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DECREE NO. 227, OF DECEMBER 5, 1894.

[Translation.]

ARTICLE I. It is decided to prolong the time two years in order that the vessels which carry on the coastwise trade between the sea and river ports of the country may be nationalized in accordance with the provisions of law No. 123, of November 11, 1892.

ART. 2. Revoke all laws to the contrary.

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TELEPHONE SERVICE IN VENEZUELA.

I inclose a copy and translation of a contract celebrated between the Venezuelan Government and the American Electric and Manufacturing Company for the establishment of telephone service in the public offices. This company, formerly the American Telephone Company, is constantly increasing its business in this country, having already in operation long-distance telephones between remote points.

E. H. PLUMACHER,

*Consul.*

MARACAIBO, *February 4, 1895.*

## CONTRACT.

[Translation.]

The Minister of Fomento, sufficiently authorized by the national executive, of the first part, and Winfield S. Bird, manager of the American Electric and Manufacturing Company, have celebrated the following contract:

ARTICLE 1. The American Electric and Manufacturing Company binds itself to place at the disposal of the Government telephone apparatus in the following public offices: President of the Republic; Ministries of the Finance, Fomento, War and Marine, Public Instruction, Public Works, Foreign Relations, Interior, secretary of the President, military council, La Guayra custom-house, national telegraph, military hospital; barracks of St. Maurice, San Carlos, and Miranda; national arsenal, powder magazine, yellow house, chambers of the senate and deputies, lookout at La Guayra, military headquarters, council of government, Miraflores barracks, and the office of the director-general of post offices.

ART. 2. The American Electric and Manufacturing Company will connect all the previously mentioned telephones with its central office in order to be able to communicate with the other points with which the company has established telephone communication.

ART. 3. The American Electric and Manufacturing Company will always have all of its apparatus in order and ready for good service, and to this end will send weekly an employee to examine them, being obliged to maintain them constantly in good condition.

ART. 4. The Government will pay to the American Electric and Manufacturing Company the sum of 494 bolivars (\$95.33) monthly for the hire of the telephones, including the connections with the lines established between Carácas, La Guayra, Las Tegues, and other points where the company may have telephones.

ART. 5. The American Electric and Manufacturing Company will install the telephone apparatus which may be necessary for the quick dispatch of Government business, wherever it may be required, at the same rate and under the same conditions as those specified above, and within forty-eight hours after receipt of notice from the National Government.

ART. 6. The Ministry of Hacienda will extend the order for monthly payment, and will be advised by the Ministry of Fomento respecting any increase or decrease in the number of telephones.

ART. 7. This contract is for one year counting from January 1, 1895, and may be prolonged should both parties so agree.

ART. 8. The doubts and controversies which may arise respecting the understanding and execution of this contract shall be decided by the Venezuela tribunals according to the laws of the Republic, and, in no case, can this contract be a motive for international reclamations.

Done in duplicate of one sole tenor at Carácas, December 27, 1894.

A. LUTOWSKY.

WINFIELD S. BIRD.

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NEW RAILROAD IN COSTA RICA—FOREIGN DEBT.

President Iglesias informs me that the very large and valuable concession of lands which was granted to Mr. Minor C. Keith, by the Government of Costa Rica in aid of the construction of a railroad from a point on the present railway which connects San José with Port Limon, to a point on the River Trio near its entrance into Lake Nicaragua, has been negotiated in London, and that the money for building and equipping the road has been pledged. This opens up to settlement a new and valuable section of Costa Rica, which will, however, be chiefly owned by the London syndicate.

The President further informs me that he has recently paid over \$1,000,000 of the internal debt of this country, and that provision has been made for the extinguishment of this entire debt at an early day. He represents that he has in the public treasury over \$200,000 which is to be used in building good cart roads through two or three sections of the state, with the view of opening up to settlement different sections of the country which are now comparatively inaccessible.

The Government has ceased to pay the interest on its foreign debt, which amounts to £102,000 (\$496,332) annually. The claim is that this country can not stand longer this immense and exhaustive drain. It is proposed that, if the holders of these bonds will reduce the principal and consequently the interest by one-half, it will then be possible for the country to meet this lighter obligation.

Exchange on New York is at this time quoted at from \$2.40 to \$2.42. Only paper money and small silver change circulate here; even the Chilean and Peruvian pesos command a premium of 25 to 30 per cent.

LEWIS BAKER,  
*Minister.*

SAN JOSÉ, February 5, 1895.

### MODIFICATIONS OF THE MEXICAN TARIFF.\*

The following modifications and additions to the Mexican customs tariff have been promulgated by presidential decree:

*Modifications and additions to the general tariff of duties on foreign merchandise imported through the Mexican custom-houses.*

No.	Description.	Old rate.†	New rate.†
128a	Jute, crude or combed.....per 100 kilograms, gross weight...	Free.	\$0.80
293	Gunny sacks .....per kilogram, gross weight...	\$0.01½	.06
336	Manufactures of tin, of iron, all or partly tinned, and of iron, all or partly nickel-plated .....per kilogram, legal weight...	.15	.20
336a	Manufactures of iron or steel, all or partly enameled.....do. . .	.15	.25
336b	Manufactured articles of iron or steel not specified, the weight of which does not exceed 10 kilograms each.....per kilogram, legal weight...		.15
508	Cloths made of jute, agave, ixtle, hennequen, or hemp, bleached, unbleached, or colored, of all kinds of texture, which have up to 32 threads of warp and woof in a square of 2 centimeters, per kilogram, gross weight.....	.05	.06
508a	Cloths made of jute, agave, ixtle, hennequen, or hemp, bleached, unbleached, or colored, of plain texture, not included in the foregoing number, and which have up to 12 threads of warp and woof in a square of 5 millimeters.....per square meter.....		.13
508b	Cloths made of linen or other analogous fibers not included in numbers 508 and 508a, bleached, unbleached, or colored, of plain texture, with or without cotton fringe, and which have up to 12 threads of warp and woof in a square of 5 millimeters.....per square meter.....		.13

\* See "Changes in the Mexican Tariff," printed in CONSULAR REPORTS No. 165 (June, 1894), p. 240.

† In Mexican currency.

The above rates go into effect on April 1, 1895, on all the above articles, except crude and combed jute, which is to be enforced July 1, 1895.

Nos. 336*b* and 508*b* are additions to the tariff.

CHARLES E. WESCHE,

*Vice-Consul.*

PASO DEL NORTE, *March 4, 1895.*

## STORAGE OF THE RIO GRANDE.

With reference to that part of the President's message to Congress regarding the scarcity of water in the Rio Grande for irrigation, which particularly concerns this district, I send herewith two copies of the Two Republics, dated City of Mexico, February 6, 1895, containing an article headed "International Question," concerning the losses which this district has sustained for several years on account of such scarcity of water.

Upon investigation, I have found that the area of 140 square miles, as mentioned in this article, is approximately correct, and I can further add that for seven years there has been little corn or fruit raised here. The only crop that has been harvested in this vicinity is wheat, and this only with difficulty, because of the lack of water for irrigation. The sufferings of the people in this district are heavy, and it seems the situation is getting worse from year to year.

The amount of rainfall in this region is exceedingly small. The population consists principally of farmers, and they have silently and patiently borne their burdens in the belief that the water question would be settled by some arrangement between the governments of the United States and Mexico, permitting the construction of a big reservoir above Paso del Norte. It is only lately that they have become restive and complaining.

According to general opinion, the construction of such a reservoir would solve the problem and remedy the scarcity of water. As to the question raised that the deposit of silt would, in time, ruin the efficiency of the reservoir, it has been estimated that about 150 years would be required to accomplish this result; but even if the reservoir should become inefficient in less than that time, I think the people of this locality might become prosperous enough to enable them to contribute means toward preventing the accumulation of silt by using dredges or other appliances.

However, it is the opinion of practical men that there need be no fear as to the reservoir filling up soon, as this could be avoided by the construction of guides or channels for the discharge of the water below, when the draft would naturally carry off a large portion of the silt that might be in the water.

The suffering of the people on the Texas side of the Rio Grande likewise becomes imminent; but so far as Mexico is concerned, and especially this district, which has had prior right to the use of the Rio Grande water for



centuries, the question is of great importance, and unless some remedy comes soon the people of this district are likely to make claim through their Government against the United States for the diversion of the water by American farmers in Colorado and New Mexico. This might be avoided by an early settlement of the water question, which could be brought about by the appointment of commissioners by both governments for constructing the needed reservoir.

CHARLES E. WESCHE,  
*Acting Consul.*

PASO DEL NORTE, *February 15, 1895.*

### TINSEL CORD IN GERMANY.

Tinsel cord, which is commercially designated in this country "imitation gold and silver cord," is manufactured in all sizes and of the quality represented by the samples sent me by the Department, by the following firms in southern Germany: Joh. Conrad Mack, Frankfort; C. F. Anselm (successors), Offenbach-on-Main; J. G. Stollberg and Aurnhammer Bros., Weissenburg, Bavaria; Friedrich Grahl, Treuchtlingen, Bavaria; Carl Grimm, Eckersmühlen, bei Roth, Bavaria; J. G. Hirschmann, Konrad Beck, and Joh. George Graff, Roth a. d. Sand, Bavaria. The finest qualities of these goods are made by Joh. Conrad Mack, of Frankfort, and by J. G. Stollberg, of Weissenburg, while the cheapest grades are supplied by Carl Grimm, of Eckersmühlen. As an illustration of the quality manufactured by the first named of these three firms, there is inclosed with this report two cards of seven samples each,\* representing as many different numbers, or sizes of gilt and silver tinsel cord, respectively, each containing from 2 to 8 strands, according to size. The market value of these goods, delivered for shipment at Frankfort, is as follows: Gilt tinsel cord, 13.90 marks (\$3.30) per kilogram; silver tinsel cord, 15.90 marks (\$3.77) per kilogram.

The manufacture of tinsel cord is simple, but involves the use of delicate machinery and skillful manipulation. So far as can be ascertained, Germany manufactures a large portion of the world's supply of these goods, while France succeeds best in the manufacture of similar goods in real gold and silver. The samples submitted by the Department are of the size designated "double"—that is, are made by winding together two smaller cords, composed of four strands each. These strands, which appear to be of gold and silver, respectively, are in reality cotton threads, colored white or yellow, and wound with an exceedingly fine ribbon or filament of brass or silvered copper. This gives each component strand and the composite cord the appearance of being made entirely of polished metal, and retains for it the textile pliancy of cotton fiber, and prevents the stiffness and warping that result when the cord is made entirely of metal.

\* Sent to a Boston firm, which applied for the information given in the report.

In the process of manufacture, the brass and copper wires are reduced to the fineness of a human hair by drawing through diamond dies. The copper wire for white tinsel is then silvered by a process which is not explained, but which is completed by exposure to heat, and the brass wire for gilt tinsel is given a golden appearance by annealing. Having been thus prepared, the wire is passed between finely adjusted steel rolls, which flatten it to the form of an exceedingly thin and delicate ribbon, which is then wound with the cotton thread under such relative tension, between thread and filament, that the latter enwraps the former, giving it the outward appearance of a polished wire. These covered threads are then wound, braided, or twisted together in numbers sufficient to produce cord of any size that may be desired. The manufacture of gold or silver bullion work is similar, except that real gold and silver are used, whereas in the imitation goods now under consideration, even white tinsel is made of silvered copper.

The principal foreign markets for German tinsel work are India and China. Formerly it was exported in considerable quantities to the United States, the exports from the consular district of Nuremberg amounting in 1891 to 90,000 marks, from which they declined to 13,000 marks in 1892, 9,000 marks in 1893, and 4,200 marks during the first six months of 1894. The two firms in this city and Offenbach formerly exported a considerable portion of their product to Philadelphia and New York, but within two or three years their American trade has declined, partly, as they allege, by reason of the increase of import duty by the tariff act of 1890, and partly for the reason that manufactures of this kind have been established during the past five or six years in the United States.

FRANK H. MASON,  
*Consul-General.*

FRANKFORT, *August 18, 1894.*

#### SUPPLEMENTARY REPORT.

Referring to my report of August 18, giving the names of nine manufacturers of tinsel cord in the districts of Frankfort and Nuremberg, I have now to submit as a supplemental report on the same subject the names of four manufacturers of the same kind of merchandise (samples\* inclosed) in Munich, viz, Adolf Rabel, No. 16 Diener Strasse; Fr. Wiedmann's Sons, 15 Residenz Strasse; C. Henning & Co., 15 Maximilian Strasse; and De-Bary Kross, Baum Strasse No. 4. None of these firms have at present any export trade to the United States, their product being sold in Europe or exported to Turkey, India, and China.

FRANK H. MASON,  
*Consul-General.*

FRANKFORT, *September 8, 1894.*

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\* Sent with the other samples.

## FIBROLINE YARN.

Manufacturers in the United States will, no doubt, be interested in a new product called "fibroline yarn." A company with a large capital has just been incorporated here to carry on its manufacture. The yarn is produced from what has hitherto been regarded as useless waste, viz, the noils created in hemp and flax spinning works. Experiments have been carried on with the new process for some time in this district, and have resulted in the incorporation of a company as noted above.

The raw material is a very dirty waste, containing, however, a large proportion of fibers of various lengths, but the difficulties encountered in treating them have hitherto proved so insurmountable that the waste—which is produced in enormous quantities in Ulster and on a still larger scale in Belgium and Italy—has been used chiefly as a material for making paper. The introduction of wood pulp and the extraordinary expansion of the wood-pulp industry in Europe have, however, almost ousted it as a paper-making material, and, as a result, the price has fallen to about \$40 per ton, or less than 2 cents per pound. It may not be generally known that in spinning flax the fibers are kept wet, and the first and all-important departure made by the inventor, a Belgian—Felix Victor Max Raabe—was to treat the fiber as wool is treated, spinning it dry and using oil in the process. To do this, he found that the appliances used for treating short wools were not in themselves sufficient, and the result of his experiments has been the adaptation of the carding, condensing, and spinning mules of the woolen trade to the peculiar requirements of his rather intractable material, which adaptations and inventions are the subjects of various patents, two in particular, which have been secured in England, France, Belgium, Germany, Austria, and Canada. In effect, the processes are practically a combination of the systems of cotton and woolen yarn spinning, with, however, some peculiarities not found in either.

The yarns produced are either single or folded, as may be required, and are mainly thick counts, it not having been found advisable so far to spin higher than twenties. These yarns, samples of which I have seen, are wonderfully regular and strong, and they can be used for any purpose for which similar vegetable-fiber yarns are now employed, as, for instance, in the weaving of linen "hardens" for aprons, for warps and wefts of Brussels and other carpets; and, although primarily the object of Mr. Raabe has been to deal with flax, hemp, and jute waste, his system has been found equally applicable to that troublesome, yet tempting, material—rhea fiber. The principal and immediate demand for "fibroline" yarns is expected to come from the carpet manufacturers. Partly owing to their cheapness, and partly for other reasons, cotton yarns have recently been extensively used for the backs of carpets, notwithstanding that linen yarns, which were invariably used in former years, are admittedly superior to cotton in durability and

other qualities. The new yarn has been tested by several Kidderminster manufacturers, and found to be in every way suitable for their needs, while its price is lower even than cotton. Indeed, the syndicate which has hitherto controlled Mr. Raabe's system has already received large repeat orders. It is the intention of the company to erect a carding and spinning plant in this district forthwith to produce the "fibroline" yarns on a commercial scale.

CLAUDE MEEKER,  
*Consul.*

BRADFORD, *January 29, 1895.*

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### AMERICAN CLOTH IN ENGLAND.

Some information has just been given me by a Bradford export merchant, which may be of great importance in the United States at the present time. This gentleman states that a representative of a New York mercantile establishment, who is now in England, is engaged in both buying and selling goods. He is buying English cloth of a certain grade to sell in the United States, and is selling American cloth in Great Britain. The Bradford merchant was shown samples of American plain woolen cloth, suitable for coatings and men's suitings, the prices of which were 50 to 60 cents per yard. The Bradford merchant states that the goods were of a superior kind for the grade, being made of short wool, and that he was astonished they could be produced in America and sold at so low a figure. The New York visitor stated that he had placed orders for these goods in Glasgow and Aberdeen, and expected to take orders for them in London. I shall investigate this matter further, and report more fully upon it. If the facts are as represented to me, the prediction made upon the passage of the Wilson Tariff Bill that, owing to the advantage given American manufacturers by free wool, their goods would be selling in Bradford, England, in six months has been more than realized.

CLAUDE MEEKER,  
*Consul.*

BRADFORD, *February 23, 1895.*

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### SUPPLEMENTARY REPORT.

Supplementing my report of February 23 upon "American Cloth in England," I beg to state that I have made further investigation of the subject. It was there stated that the representative of an American house had taken orders for a certain grade of woolen cloth, produced in the United States, in Aberdeen and Glasgow, and that he expected to take orders in London.

I have since learned that one Bradford house (Messrs. Halbot & Lens, Leeds Road), were at the time furnished an assortment of "yard samples," and that they have sent their traveling men and agents to India, Italy, South America, and France, carrying this line of United States goods. In India, this firm has a large trade, and it has sent, as suitable to that market, a fabric manufactured in New York, known as "the twist melange flannels." They expect to take liberal orders for them at 28 to 30 cents per yard, double width. The samples being shown in Italy, France, and South America, at from 50 to 65 cents per yard by this Bradford house, and which they think may prove very popular, are known in the trade as "Algiers cloth." When samples of these cloths were shown in Paris, where the Bradford firm has a branch, the French merchants said, "they were of wonderful value," and that there would undoubtedly be a sale for them in time, though at present there was no demand. Good orders are expected for them from Italy and Brazil. Messrs. Halbot & Lens, on February 26, cabled to W. E. Derby & Co., New York, to send them immediately one case of assorted black-blue Algeria cloth, and stated that if execution sample was exact large orders might be expected. This case of goods, wholesale value about \$400, will be used experimentally in the English house trade, and to provide further samples for travelers. The gentlemen engaged in the transaction here state that the goods are undoubtedly superior to the same grade produced here, in that they contain no shoddy, are entirely composed of short wool, and are very strong, while the same class of goods produced here are what the trade terms "tender," and are not so likely to stand the "thumb test." At the same time the American was introducing his native goods, he was also a liberal buyer of Bradford worsted coatings and other cloths for which he could find a market at home.

So far as I am aware, this is the first instance in which an English house has sent out travelers carrying a line of American woolen cloths, and certainly the first time such goods have been sold in Bradford, the wool and worsted capital of England. W. E. Derby & Co., and others may have placed additional orders here, but this is the first and only case that has come under my observation. It may be remembered that I reported last autumn the sale of a small lot of Ohio wool here, which gave great satisfaction.\* Recently also about one hundred pairs of blankets, made in Massachusetts, were sold here at auction. They had been sent over by the manufacturer as an experiment. While they were delightful to the touch and handsomely finished, they had little wool in them, and were entirely too light for private use; consequently, they brought a very small price.

CLAUDE MEEKER,  
*Consul.*

BRADFORD, *February 27, 1895.*

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\*See CONSULAR REPORTS No. 170 (November, 1894), p. 381.

## CONSUL MEEKER'S STATEMENTS CONFIRMED.

The American Wool and Cotton Reporter, in its issue of March 14, says editorially :

It has been recently reported in several leading newspapers that American woollens were being sold at a profit in Bradford, England, the reputed woollen manufacturing center of the world, and that orders had also been taken for these goods in Glasgow and Aberdeen. This information was received by the State Department at Washington from Consul Meeker, at Bradford, who claimed that the representative of a New York mercantile establishment was now in England buying certain grades of English cloths to sell in the United States, and at the same time selling American fabrics in Great Britain.

Not satisfied to dismiss these reports without proper investigation, the Reporter has made very thorough inquiries and presents on page 321 substantial evidence of the correctness of Consul Meeker's statements, though not of his conclusions as to the great significance of these exports. The woollen manufacturers of this country have been somewhat disturbed by the fact that exports from Bradford to the United States in January, 1895, showed an increase of £360,000 as compared with the corresponding month of 1894. We are fighting courageously to beat our English cousins upon our own ground, and the public ought not to be deceived as to the real issue.

It is true that our domestic manufacturers, by constant effort and great ingenuity, have been able to meet the bulk of the foreign competition thus far this season, and they hope to continue in the lead. Domestic woollens have never been so popular in the United States as they are to-day, when our people have learned that foreign fabrics are mainly attractive for their fine finish, due in part to the use of short fibers which represent the element of durability in inverse ratio to their seductive appearance when fresh from the packing case.

The article referred to above, and printed on page 321 of the Wool and Cotton Reporter, is in the form of a letter from New York, and is as follows :

The statement which has been going the rounds of the press the past week to the effect that American woollens were being sold in Bradford, England, the famous woollen manufacturing center of the United Kingdom, at a profit, and that orders had also been placed in Glasgow and Aberdeen, Scotland, has foundation despite the fact that it has been taken *cum grano salis* by most people identified with the wool and woollen manufacturing interests of the country, and generally regarded as a piece of political buncombe by others.

It may seem very like "carrying coals to Newcastle," nevertheless there were shipped yesterday (the 13th) from New York to Bradford, England, per the White Star Line steamship *Teutonic*, two cases of domestic woollens. The goods were shipped by the dry goods commission house of W. E. Derby & Co., 60 Worth street, and consigned to well-known Bradford converters and commission merchants, whose names we are not at liberty to mention. These fabrics, so far as we are able to learn, comprise the first and only shipment of American woollens to Europe.

The goods in question are 54-inch piece dyed black and blue wool chevots, weighing 22 ounces, which, according to Consul Meeker's report, were purchased by the Bradford parties "for 50 and 60 cents per yard" net. These figures, we understand, are substantially correct. A representative of the Wool and Cotton Reporter has seen the goods in question, and in our next issue we shall publish an analysis and layout of the fabric. While on these goods alone actual sample orders have been obtained, this same commission house state that they have secured duplicate requests on other lines of domestic woollen fabrics to go to India, and are now sending ten different lines of samples of cheap flannels, ranging from 25 to 75 cents, to that country.

In view of the high degree of perfection which English manufacturers have reached in the designing and fabrication of woolen goods, in view of their cheap labor and their skillful handling of wool substitutes, which process has reached a degree of perfection in Great Britain that is found nowhere else in all the world, and considering, too, the fact that English manufacturers have reduced the manufacture of wool generally to a closer science than probably any other country in the world, it would appear to most people exceedingly foolish and ridiculous to assert that our domestic woolen manufacturers can expect, or even hope, to find even the most limited market for their manufactures of wool abroad. Nevertheless, an attempt is being made to gain a foothold in the English market for American men's wear woolens, while Alexander Smith & Sons are also attempting to capture a portion of the British trade on their moquette carpets.

The arguments advanced by the exporters of these domestic fabrics to support their assertion that there is a limited outlet in England for certain low-grade American woolens, are in substance that it is, of course, an impossibility and foolish to expect anything like a large general business being accomplished, yet at the same time there are certain fabrics—such a one, for instance, as is mentioned—in which the stock constitutes the larger part of the cost of production and the labor a small part, that can be marketed in English markets at a profit to the American manufacturer.

In explanation of the attempt which they are making to introduce domestic woolens in the markets of Bradford, Leeds, Aberdeen, Glasgow, London, and other English trade centers, Mr. W. B. Derby said: "It is only on a certain few classes of American goods that it is possible for us to secure an English market. It is only on goods made of American stock, such as is not used on the other side, but which we have been forced to use from sheer necessity, that would sell in that country. As soon as a reduction of duties was effected on manufactures of wool, we commenced to investigate the matter of a possible exportation of domestic fabrics; we compared the foreign and domestic prices as they gradually approached each other and the fabrication of the closely competing foreign and domestic fabrics, with the result that we discovered an opportunity to gain a foothold for American woolen goods in England even though small. In endeavoring to make a place for these goods, we found much prejudice existing against the use of stock people there were not accustomed to, and found it necessary to sell the goods at lower prices than we could purchase similar goods of English manufacture for, at the same time we were selling at a profit. We, in fact, could not buy similar English fabrics at within 4d. of what these American goods were sold at, but as soon as our line of goods becomes better known I have no doubt but that we shall be able to obtain from 3d. to 4d. per yard more than now."

W. B. Derby & Co. showed the Wool and Cotton Reporter representative a cablegram dated Bradford, February 26, which read as follows:

"Lignite, New York.—We order one case assorted blue Algerian cloth immediate. If execution sample exact large orders.

"HALLENS."

W. E. Derby & Co. state that they are represented in Bradford, London, Glasgow, and other English markets on all the lines of American goods which they handle. "Were the American manufacturer," said Mr. Derby, "to attempt to touch the English manufacturer on the stock he is used to handling, were he to attempt to meet the Englishman on his own ground, he would fail of accomplishing the object sought, but on goods on which we are particularly skillful and familiar with here, on goods made from strictly American stock, there is a fair chance of our placing, in moderate quantities, in English markets, and there is an opportunity of steadily increasing the business. The English woolen manufacturer is really in a position, as regards American competition, similar in some respects to that which he occupies toward Germany. The German can not touch him on his broadcloths, but on dress goods and cloakings he is forced to divide with the German a good share of his home trade. If we can compete with the English manufacturers successfully on the lines I have mentioned, we can educate them to the use of stock which will produce a fabric of greater intrinsic value

than many which are now made in England, the sole object of whose manufacturers seems to be attractive finish and sightliness rather than wearing qualities. The intrinsic value of our goods," said Mr. Derby, "is the point we have got to fight out in England, which we must seek to impress on the trade there."

The foregoing arguments in support of a probability of the American manufacturer being able to sell a portion of his products in England, are simply those expressed by the parties who are making the attempt, and must not be construed as representing the opinions of the Wool and Cotton Reporter. It is unnecessary for us to say that it would require a great many more facts and arguments than have yet been adduced to convince us that our domestic manufacturers can reasonably expect any considerable sale for their fabrics beyond the confines of our own country. What the American woolen manufacturer wants is the American market, and what he is able to obtain outside of it is likely to be of small value to himself or anybody else.

### AMERICAN CARPETS IN SWITZERLAND.

My attention was called lately to the fact that American carpets were being introduced into Switzerland by a German concern of Stuttgart, and that the article was commented upon favorably. I therefore set about to investigate, thinking it might interest our American carpet manufacturers. Up to a recent period carpets were used but sparingly in this country. In the better class of houses all floors are inlaid, and a carpet rug in the center of the room and rugs of different sizes in front of certain pieces of furniture, were all that was deemed necessary in a well-furnished house. Carpets, however, were then and are now worked up to a considerable extent by furniture manufacturers in the upholstering of furniture of all descriptions. Of late years a change has taken place, and while carpeting rooms is not as generally resorted to in Switzerland as is the case in America, the proprietors of first and second-class hotels, as well as those of the population able to afford it, have commenced carpeting their rooms, especially during the prevalence of cold weather, and store them away in summer until the return of winter.

No carpet factories are operated in Switzerland; the supply is imported from Germany, England, France, and Belgium. Swiss custom-house statistics show the imports of carpets for the three years below named to have been :

Description.	1891.	1892.	1893.
Coarse woolen carpets without fringes, no velvet-like weaving.....	\$31,185	\$28,770	\$17,280
Other woolen carpets, velvet-like weaving, cut or not cut, fringed, etc.....	514,255	482,680	456,940
Mohair carpets of animal hair.....	14,500	15,950	20,500

The first-named variety is supplied mostly by Germany and England, and the average prices, as shown by the customs statistics, were as follows: In 1891, \$105 per 100 kilograms (220 pounds); 1892, \$105; 1893, \$90. The



second variety, from the same sources of supply, with France, Belgium, and Turkey as close competitors, averaged as follows: In 1891, \$245 per 100 kilograms; 1892, \$220; 1893, \$220. The third variety, principally of German origin, was imported at an average price of \$50 per 100 kilograms for the three periods above-named.

The customs duties are as follows: For the first variety, 25 francs (\$4.83) per 100 kilograms; second variety, 50 francs (\$9.65); third variety, 10 francs (\$1.93).

I am informed that the third kind, *i. e.*, cheap carpets made of animal, hair, and jute are in good demand, but prices are low, and, perhaps, the United States could not successfully compete with Germany and Belgium. For the second kind, however, namely good woolen carpets, in which I think the United States excels all other countries, as far as quality is concerned, there seems to be a good opening for the American article. Messrs. Meyer-Mueller & Co., of Zurich and Winterthur, a large and well-known concern in that line, inform me that, in their opinion, from what they have seen of American carpets, the following varieties could successfully be introduced: Tournay, moquettes, or Axminster, body brussels, and. tapestry carpets. These varieties have already, in a small way, been introduced in the Swiss markets via Germany, and, as already stated, have made a favorable impression.

Some of the retail dealers in Zurich engaged in that line, who are quite numerous, with whom I have spoken on the subject, seem to doubt the advisability of introducing American carpets, the impression seeming to prevail that everything called American must naturally be too high-priced, hence noncompetitive. Messrs. Meyer-Mueller & Co., however, who are wholesale dealers and exporters, shipping goods of their own manufacture (furniture), as well as of their importation (carpets, etc.), all over Switzerland, Italy, France, and Belgium, seem to be sanguine of being able to successfully introduce American carpets in the above-named countries, provided prices are such that competition is possible against other sources of supply. They invite correspondence from American carpet manufacturers with a view of taking an agency, and are ready to furnish whatever security or references are required.

Swiss customs statistics show that in the year 1892, \$1,100 worth of woolen carpets from America passed the Swiss frontier, but, no doubt, if the truth were known, a better showing could be made, as there is no doubt in my mind that larger quantities were imported, but credited to either Germany, France, or England.

Therefore, summing up, I would advise our carpet manufacturers to look carefully into this matter, as with some efforts applied in the right direction a new outlet for their fabrics may be secured.

Following is a list of parties dealing either exclusively in carpets or in furniture and carpets: Meyer-Mueller & Co., Heiner Gattiker Sohn, Heer-Cramer & Co., Ad Aeschlimann, Rahn & Oltramare, Schoop-Buerger, Vereinigte Schweizer Bazars, J. G. Ith, and E. Meier-Meili, Zurich and

Winterthur; Steiner & Wirz, Basle; Ruegg-Perry, and Carl Lumpert, St. Gall; Hans Hassler & Co., Aarau; Fiala & Co., and Kuhne & Jacquard, Geneva; Heer Cramer & Co., Zurich, Hausaund, and Neuchatel; Wolf & Aschbacher, Zurich.

EUGENE GERMAIN,

*Consul.*

ZURICH, *February 25, 1895.*

## NEW REMEDY FOR POTATO DISEASE.

I inclose a clipping from this morning's issue of the Belfast News Letter, upon what purports to be a new and highly successful preventive of potato diseases, increasing the yield, which may be of service to the agricultural interests of the United States.

JAMES B. TANEY,

*Consul.*

BELFAST, *February 23, 1895.*

[From the Belfast News Letter, February 23, 1895.]

Potato culture seems destined to enter on a new era of improvement both in quality and quantity. The Royal Dublin Society, whose object is to promote the prosperity of Ireland, has received from its late agricultural superintendent, Mr. W. J. Malden, a report attesting the efficacy of a mixture of sulphate of copper and lime prepared by Strawsons, (limited), London, for preventing potato blight. Says Mr. Malden, "The results where my brothers and others have tried it on a large scale prove its efficacy." Mr. G. F. Strawson, who is in this country at present, has been authorized to give a practical demonstration of his process at the next spring show of the Royal Dublin Society. Indeed the process has got beyond the stage of experiment, and is now an assured success. The result, as regards every variety of potato treated, has been an increased yield of considerably more than 2 tons per acre, besides the immunity of the crop from disease. This has been established as directly due to spraying with Strawsons's process. Hence the discovery is one of national importance. When generally known and trusted, it means increased wealth to the farmers. There is no secret about the ingredients of the mixture. Mr. Strawson is candid and communicative. Here is what he says as to the ordinary process: Materials—20 pounds of pure sulphate of copper, 10 pounds of pure burnt lime, two tubs, one wooden pail, one pair of scales and weights. Directions for making the mixture: Put 20 gallons of water into one tub; dissolve 5 pounds of sulphate of copper in the water; put  $2\frac{1}{4}$  pounds of lime into the other tub; add a little water to slack it to powder, and then more water to make it up to 5 gallons of milk of lime; then pour the contents of the lime tub into the copper solution, stirring it well with a stick; allow the mixture to stand ten minutes. If the clear supernatant liquid—*i. e.*, what is uppermost—has a blue tint, add a few ounces more of slacked lime. Allow it to stand again. If the clear mixture has a blue tint, still add more lime until the clear liquid becomes white. This quantity suffices for a quarter of an acre. The estimated cost of these materials, which suffice to produce sufficient mixture for the treatment of an acre, is 8s. This, after all, is little better than giving a recipe to make fancy bread, for Mr. Strawson emphasizes the fact that the sulphate of copper requires to be 98 per cent pure, and care must be taken that the mixing tubs are not used for domestic purposes or for feeding animals, the sulphate of copper being, of

course, poisonous. Another indispensable condition is that the lime must also be pure and fresh burnt. Galvanized vessels won't do at all. Therefore, as in making the fancy bread, skilled knowledge comes into play, and all errors of mixing will in this way only be avoided. Mr. Strawson has made fungicides, glomicides, and such like investigations the object of a lifelong study, and the fruit of his scientific knowledge is now utilized for the public benefit. His process consists of a simple knapsack machine, which is charged with the mixture ready for use, save only the pouring in of a little water from time to time to mash the powder through the machine sieve. The cost of the materials amounts to some 6s. per acre. This small outlay, securing a return of about 2 tons increment to the crop, besides immunity from disease for the rest of it, is certainly a public boon.

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### READY-MADE HOUSES FOR SICILY.

Since the recent earthquakes in Sicily, and especially in Calabria, and the destruction or damage thereby of so many buildings, the latter having been poorly constructed on account of scarcity and high price of suitable lumber for construction of ceilings and roofs, I have been thinking about the practicability of introducing American ready-built frame houses, as they, in my opinion, if well braced in walls, and one story only, would be more apt to resist the frequent shocks than the buildings usually put up here.

I have asked the opinions of various practical men upon this subject, and, had their views all agreed, I should have made this suggestion to the Department sooner, but, while some shared my opinion, others admitting the superiority of "American cottages" as to safety, appearance, and convenience, expressed a doubt as to whether the people could be induced to adopt anything new in this line and so different from their mode of constructing houses for centuries past.

I have been encouraged, however, by an opportunity being offered to at least advertise the buildings in question at little expense, with a possibility of good results. Professor Rico, the director of the observatory at Catania, called on me. This gentleman is a member of the "Government commission for the study of earthquakes in Sicily and Calabria and for provision of precautionary measures." Speaking about various American industries, I mentioned the ready-built frame houses, and showed him some pictures of American cottages. The Professor admired them very much and expressed his belief that they would be just the thing for Calabria and the other earthquake-stricken districts, and if the start were made with just one or two, they would soon become popular, and the people, feeling more secure in them, would doubtless readily adopt them. Of course, a great deal depends on prices and cost of transportation.

Professor Rico requested me to obtain for him some illustrated catalogues from manufacturers of such houses, and said he would bring them to the notice of the other members of the royal commission, and would place them in Calabria, wherever they will do the most good, and personally recommend their adoption. There seems to be an opportunity for extension of Amer-

ican trade if manufacturers will avail themselves of this offer without delay. Send the desired catalogues to either the United States consulate, or Prof. A. Rico, Osservatorio, Catania.

The buildings should be mostly one story, small, say from two to five rooms, and walls supplied with braces; prices would have to be low, especially on the smaller ones

LOUIS H. BRÜHL,

*Consul.*

CATANIA, *February 21, 1895.*

### SUEZ CANAL TRAFFIC IN 1894.

During the year 1894, the number of vessels passing through the Suez Canal was 3,352, being 10 in excess of the preceding year, and the receipts from tolls amounted almost to \$15,000,000. The number of ships using the canal in 1874—twenty years ago—was only 1,264. These figures, compared with those of the present day, show how completely the canal has revolutionized the channel of traffic between the far East and Europe. The largest business year the canal has ever had was 1891, when 4,206 steamers passed through. The application of the electric light to marine purposes is now so general that nearly 95 per cent of the vessels using the canal last year were enabled to steam at night. Not one mercantile ship flying the United States flag entered the canal last year, although many cargoes destined for America passed through in British ships. The detailed record of the traffic in 1894 is appended:

Nationality.	Steamers.	Tonnage, net.	Traffic receipts.
American.....	*5	3,001.71	\$4,826
Austrian.....	78	178,998.64	340,200
British.....	2,394	6,009,902.98	10,948,074
Dutch.....	188	352,451.28	653,400
French.....	184	463,430.93	891,380
German.....	294	624,555.18	1,139,985
Italian.....	63	119,084.93	200,681
Norwegian.....	40	65,862.71	117,833
Russian.....	35	77,421.38	162,938
Spanish.....	28	82,269.52	157,534
Turkish.....	33	39,395.56	107,492
Japanese.....	6	12,103.56	22,790
Portuguese.....	2	672.29	1,217
Egyptian.....	1	810.28	1,468
Guatemalan.....	1	145.02	263
Total.....	3,352	8,039,105.97	14,770,081

\* War ships and yachts.

FREDERIC C. PENFIELD,  
*Agent and Consul-General.*

CAIRO, *February 9, 1895.*

## EXHIBITION AT ODESSA.

I submit herewith a copy of a letter to this consulate from the Odessa section of the Imperial Russian Technical Society and the therein mentioned regulations. These papers deal with the question of the exhibition, to be held at Odessa beginning May 15, 1895, of objects for the construction and inner arrangement of dwelling houses, and it is hoped here that exhibitors from the United States may be induced to take part by reason of the fact that the objects intended to be used as exhibits will be admitted into Russia free of customs duty.

J. H. VOLKMANN,  
*Vice and Acting Consul.*

ODESSA, *February 26, 1895.*

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[Translation.]

REGULATIONS FOR THE EXHIBITION CONCERNING THE CONSTRUCTION OF DWELLING HOUSES, ORGANIZED IN 1895 AT ODESSA BY THE ODESSA SECTION OF THE IMPERIAL RUSSIAN TECHNICAL SOCIETY.

SECTION 1. The Odessa section of the Imperial Russian Technical Society is organizing an exhibition concerning the construction of dwelling houses which will comprise the products of all branches of manufactures, arts, and trades employed in the construction and interior arrangement of dwelling houses.

SEC. 2. The exhibition will be open the 15th of May, 1895, and will close on the 1st of October following.

SEC. 3. The exhibition is organized particularly for Russian exhibitors; foreigners are admitted to take part in it only by special invitation of the Committee of Administration.

SEC. 4. The articles mentioned in the annexed programme are received at the exhibition.

SEC. 5. The committee of administration has charge of organizing the articles exhibited, of fixing the terms of entry, of management of the material and financial property and general direction of all the business of the exposition, as well as the provisions relating to the exhibitors and to the interior arrangement. The provisions adopted in regard to the exhibitors and the measures for interior order and arrangement must be sanctioned by the council of the section.

SEC. 6. The committee of administration is composed of the presidents of the divisions of architecture and construction of the section and of members elected by these two divisions, whose appointment must be ratified by the council of the section. One of the above presidents appointed by the council of the section presides over the committee of administration, and the other fills the office of assistant president.

SEC. 7. The products exhibited shall be submitted to the examination of a jury composed of experts chosen by the divisions of architecture and construction, from their own members or from specialists outside of these divisions. This jury determines the awards for the most remarkable products by conforming to the regulation relative to awards given by the Imperial Russian Technical Society.

SEC. 8. In regard to awards, the products exhibited are divided into three groups or classes, viz, (1) local products from the town of Odessa, (2) products from other Russian localities, and (3) foreign products.

SEC. 9. The awards are adjudged separately to each group, in the name of the Imperial Russian Technical Society of Odessa, and are ratified by the council of the section. The encouragement of local products being one of the chief aims of the exhibition, the highest awards (the medals) will be adjudged only to the exhibitors of Odessa, who, however, may also receive honorable mention. Inasmuch as the participation of the Russian exhibitors from other localities is desirable for the purpose of contributing, on one side to the improvement of local products, and on the other to the possibility of competition between exhibitors from other localities and those of Odessa, the highest recompense conferred upon the best products from other localities shall be honorable mention. The foreign products can only be rewarded by honorary diplomas.

SEC. 10. The exhibitors forming part of the committee of administration and of the jury can not enter into competition.

#### PROGRAMME OF THE EXHIBITION.

The following articles are admitted to the exhibition:

- (1) Natural and artificial building materials in the rough and wrought, as well as set up or worked up.
- (2) Carpentry, joiners' work, locksmiths' work, and ironwork, turned articles, stucco ornaments, glass, colored paper, etc.
- (3) Interior furniture and appurtenances (portières, curtains, bronzes, terra cotta, and articles of decoration and art).
- (4) For lighting, heating, and ventilation, hygienic constructions, shower baths, water closets, etc., books and tables relative to hygienic constructions.
- (5) Apparatus and fire-extinguishing preparations for domestic use.
- (6) Drafts, designs, models, photographs, and all plans relating to buildings, monuments, and other architectural and decorative art work.

[Translation.]

*Mr. Consul-General:*

The Odessa section of the Imperial Russian Technical Society, in organizing for the month of May an exhibition concerning the construction and inner arrangement of dwelling houses, has directed the executive committee to invite foreign firms to take part in this exhibition.

We therefore have the honor, sir, to forward to you, inclosed herewith, the statutes and programme of the exhibition, and to request you, in the name of the executive committee, to take the necessary steps to advise the manufacturers of your country of this exhibition who may interest themselves in it.

We especially call your attention to the paragraph which permits the free importation of foreign products for the exhibition.

THE COMMITTEE.

## TIN-PLATE TRADE OF SOUTH WALES.

Until recently, South Wales enjoyed a monopoly of the tin-plate trade, and the enormous output of a few years ago had a very marked effect upon the commercial progress of this industrial center. The United States has always been, and still remains, the greatest customer, but since she has undertaken the task of supplying her own wants in this branch, as she has long since been doing in other branches of the iron and steel trade, there has been a considerable falling off in the American demand without any compensating supply being needed for other markets. Therefore, the difference has been

an entire loss to the South Wales manufacturers, few of whom appear to be interested in the new works on American soil.

The year 1894 has been a wretched one, on the whole, to the tin-plate people in this country, and when it is so abundantly evident that there are too many mills in existence, it would argue a very sanguine temperament, indeed, to look forward to brighter prospects during the present year in face of the probability of the American demand "growing smaller by degrees and beautifully less."

Fond hopes were cherished among all classes interested that the Wilson tariff would immediately usher in such a revival of trade as had never been known in the history of plate manufacture, but by this time hope has given away to despair for the most part, for now, throughout the district, one hears rumors of stoppages of works, requests for concessions, and demands for reductions of wages. The manufacturers have, for some time past, been straining every nerve to reduce the cost of production to the lowest possible point, and what is known locally as the "standard of 1874," which for a number of years had been maintained throughout the works generally, has been broken in such a way that the reductions effected are by no means uniform, and, consequently, wage disputes have had to be contended with on this side of the Atlantic as well as in the United States. With a view to restrict the output, the standard make per mill of forty boxes was reduced to thirty-six per shift, and now, besides accepting a reduction of  $12\frac{1}{2}$  per cent in wages, it seems that in many of the works, frightened by the threat of a long stoppage, the make of forty boxes has been restored. The effect of this promises to be that not only will the reduction of wages be permanent, but hundreds will be added to the thousands of tin-platers already out of employment, while the already overstocked market will have a considerably increased supply thrown upon it. Whether the men will accept these conditions all round it is difficult to say, but this much is certain, that their union is practically disorganized, and possibly much will depend in the future upon the exertions now being made to restore the union to its former strength.

How far it applies, I can not say, but it is claimed here, in certain quarters, that glass and crockery are now very serious competitors with tin plates for the packing of fruits, vegetables, and corn, and that cardboard and wooden boxes are more generally used than formerly in packing goods for which tin boxes were used until the last two or three years.

The can makers, who, in ordinary times, are accustomed to place their contracts for January and February deliveries considerably earlier than the present time, are still holding off, apparently with the expectation of being able to secure their material at still cheaper rates than those now ruling. The following clipping from a local paper will serve to show how the prices have been affected by the diminished output:

We would all be more glad to turn our backs upon the year now closing if there were any signs of improvement in the coming one, but the outlook is so utterly hopeless, it may

be that the next year will be no better than this. Twelve months ago it was fully expected that the new American tariff bill would relieve and throw fresh vigor into our trade, but these hopes have been rudely shattered. The American tin-plate works, which it was thought would have to stop, are going on as vigorously as ever, competing for and oftentimes securing orders which formerly came exclusively to this country. Their position has actually improved recently, inasmuch as they have obtained a reduction in wages of about 30 per cent, while in this country the strong effort made in the same direction has up to the present proved futile, excepting in a few isolated cases. A year ago Bessemer cokes were selling at 10s. 4½d., free on board Wales for full weight 14 by 20; to-day they can be had in plenty at 9s. 4½d., showing a reduction of 10 per cent. Excepting those plates for packing oil, practically the whole demand is now for lighter gauges, going down as far as 85 pounds per 112 sheets 14 by 20, instead of the former standard of 108 pounds, and this change is evidently to be permanent. Probably the most striking feature of the year's trading has been the seriously diminished call forterne plates from the United States, the native works being equal to supplying almost the whole of that important trade. There has also been a marked falling off in all kinds of charcoal tins, but more especially the highly finished sorts. A feature of the year, too, has been the large shipments of finished black plate, not only to the United States, but to the continent of Europe. It is not thought, however, that this trade will continue with us, but be gradually absorbed by native mills. On all hands there is nothing to be seen but the keenest opposition, and Wales can no longer hope to monopolize the tin-plate industry as heretofore. Business has, of course, been seriously broken into this week by the holidays, and any transactions concluded have been quite trifling. Prices show no signs whatever of improvement; on the contrary, it is the general belief that they will remain at the present low level; it may be for months to come.

It is but right to add that some manufacturers are hopeful of a speedy change for the better. I submit export figures for the past year:

*Tin-plate exports from Great Britain to the United States and other countries.*

To—	Month ending December 31—			Year ending December 31—		
	1892.	1893.	1894.	1892.	1893.	1894.
United States.....	£308,095	£182,578	£301,284	£3,702,442	£3,352,693	£2,781,027
Russia.....	54,333	34,039	48,352	354,293	375,507	283,367
Germany.....	5,264	3,477	2,192	54,768	40,630	48,229
Holland.....	5,359	7,242	5,984	63,994	76,281	70,357
France.....	9,463	10,942	8,585	135,567	150,815	126,972
Portugal, Azores, and Madeira.....	5,469	3,125	4,800	68,938	74,629	35,693
Italy.....	5,786	4,170	2,850	91,606	51,076	36,420
Roumania.....				65,489	60,331	64,158
Brazil.....	5,861	1,774	6,681	83,751	57,994	62,875
Argentine Republic.....	6,249	3,805	5,121	45,848	44,746	37,897
British East Indies.....	5,493	10,472	11,192	61,241	79,813	99,421
Australasia.....	9,851	12,223	13,392	111,867	101,400	145,215
British North America.....	13,754	17,464	14,632	225,790	226,323	207,402
Other countries.....	17,878	20,115	33,916	264,622	299,062	351,184
Total.....	452,855	311,426	451,071	5,330,216	4,991,307	4,350,217
Total in American currency.....	\$2,203,592	\$1,515,389	\$2,233,836	\$25,936,831	\$24,167,666	\$21,168,156

ANTHONY HOWELLS,

*Consul.*

CARDIFF, *January 15, 1895.*



## NOTES.

**Sewerage of Christiania.**—Consul Gade, of Christiania, Norway, writes under date of January 18:

I regret not to have been able sooner to send my answer to the Department's circular on sewerage.\* In order to reply to the interrogatories contained in the circular, I had to apply to the chief engineer of the public works of the city of Christiania. This gentleman has sent me a map of the city made on the scale of 1 to 4,000, on which the common sewerage is indicated, together with their dimensions and manholes. To the interrogatories the following answers were given:

- (1) The system is the ordinary one, flushed at intervals with water from the waterworks.
- (2) At the end of the past year the length of the sewers was: Constructed of brick, 15,960 meters; masonry (granite), 19,124 meters; pipes, 128,702 meters; total, 163,786 meters (537,380 feet).
- (3) Number of houses, 5,500.
- (4) Number of men employed, 12; horses, 2. The daily wages paid to the men are from 61 to 74 cents, and \$1.18 per one horse and driver.

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**Vegetable Parchment Paper.**†—Consul-General Morss, of Paris, sends the following report, dated February 7, 1895:

The manufacture of vegetable parchment paper is only carried on in France on a very small scale. After prolonged inquiries, I have only been able to discover two mills producing this kind of paper, that of Messrs. Montgolfier frères, of Annonay, and Messrs. Procoh & Co., of Angoulême. The aggregate product of these two mills is small, and I am advised by M. Blaneau, the vice-president of the *Chambre Syndicale du Papier et des Industries qui le transforment*, an association representing all the paper interests of France, that neither of these houses exports any of its product to the United States. In the official statistics of exports and imports, there is no specific mention of this class of paper. The two firms named export some of their products to England, these exports being, of course, included in the figures given under the general classification of "paper and its applications." The price at which this paper is sold for England is 105 francs per 100 kilograms (9 cents per pound) delivered at the dock at the port of shipment. The customs duty on all kinds of ordinary paper is 13 francs per 100 kilograms (1.1 cents per pound) if imported directly into France from the country of origin, and 16.60 francs per 100 kilograms (1.4 cents per pound) if imported from a country outside of Europe through any other European country.

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**Wages of Steamship Building and Crews at Toulon and Marseilles.**—Under date of December 13, 1894, Consul Thomas, of Marseilles, writes that he was delayed in preparing his report for the series "Wages of Steam-

\* Reports in answer to this circular were printed in *CONSULAR REPORTS* No. 173 (February, 1895), p. 145.

† For series of reports on "Vegetable Parchment Paper" see *CONSULAR REPORTS* No. 171 (December, 1894), p. 479.

ship Building and Crews," which was printed in CONSULAR REPORTS No. 170 (November, 1894), p. 289. It is as follows:

The building of ships in this consular district is mainly centered at and near Toulon, the latter city being the location of the great construction department of the French navy. At the Government yards, the following wages are paid per day of nine hours, with work practically continuous, and a pension allowance after twenty-five years of continuous service:

*Per diem wages paid by steamship builders.*

Description.	Wages.	Description.	Wages.
Pattern makers.....	\$1.35	Calkers.....	\$0.96
Machinists.....	1.25	Painters.....	.77
Boiler makers.....	1.45	Furnace men.....	.72
Plumbers and pipe fitters.....	1.35	Sheet-iron workers.....	1.06
Carpenters.....	1.06	Coppersmiths.....	1.15
Joiners.....	1.11	Iron molders.....	1.01
Drillers.....	1.15	Brass molders.....	1.06
Fitters-up.....	1.15	Common laborers.....	.43
Riveters.....	1.01		

The wages paid at La Seine, a very large establishment, are slightly lower for the skilled labor, but practically the same for lower grades. The ships constructed at this institution are both steam and sailing vessels of steel, iron, and wood. The establishment of the Messageries Maritimes, at La Ciotat, pays a scale of wages nearly exactly the same as La Seine. There is, however, in neither case a pension allowance, as at the Government works, nor any guaranty of continuous employment.

The small yards at Marseilles, Cette, and other locations than those mentioned, which are, however, rather repair shops than works of construction, procure their men as needed, and pay, sometimes more, sometimes less, than at the large works, the rate of wages depending somewhat on the urgency of the work in hand. The average rate at these establishments is perhaps slightly lower than at the institutions named above.

The wages paid per month on shipboard in the French Mediterranean service are, for the respective classes:

Description.	Wages.	Description.	Wages.
Seamen:		Firemen.....	\$15.44 to \$17.37
Able.....	\$11.58	Trimmers.....	11.58 to 15.44
Ordinary.....	9.65	Deck hands.....	11.58 to 15.44
Engineers:		Carpenters.....	15.44 to 17.37
First.....	\$48.25 to 57.90	Stewards.....	8.72 to 9.65
Second.....	38.60 to 48.25		

The above wages are paid by the regular lines carrying passengers and freight, and the figures may be accepted as the average wages paid for the respective classes on French boats doing business from this port.

**Mercantile Information in Rheims.\*—**Consul du Bellet, of Rheims, France, writes as follows, under date of February 7, 1895:

There are in this consular district no mercantile agencies similar to the agencies in the United States giving ratings of business firms. Such information is generally secured through

\* A series of reports on "Mercantile Agencies in Foreign Countries" was printed in CONSULAR REPORTS No. 172 (January, 1895).

private sources, and especially through the good offices of the local bankers, who, with a view to encourage trade and oblige their customers, take pleasure in answering, to the best of their knowledge and belief, such questions as may be propounded to them concerning the financial standing and reliability of the business firms of their region. The information thus given is strictly confidential, and it is well understood and stipulated that, in no case, shall it bind the responsibility of its author. Among the leading bankers of Rheims, Messrs. Ed. Chapuis & Co., 14 rue Carnot, and Messrs. Camuset & Co., 5 rue du Clou dans le Fer, have expressed their willingness to extend to business firms in the United States the favor they show to their own customers.

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**Recent Improvements in New Brunswick.**—Consul Whidden, of St. Stephen, reports, under date of January 25, 1895, as follows :

During the past year, several enterprises were undertaken, the completion of which can not fail to benefit the citizens of St. Stephen and Milltown, and residents of the adjoining city of Calais, Me. An improved telephone system has been introduced, connecting Calais and St. Stephen, and connection is to be made soon with Milltown. The line has been extended to Princeton, 20 miles north, and to Eastport, 30 miles south of Calais. A street railway, 6 miles long, and connecting the three municipalities, has been built. All the steamboat landings and railroad stations are reached by it, and for its entire length it passes through streets used for business purposes, or for private dwellings. The roadbed and the equipments are superior, cars of late and improved designs have been provided, and those for winter use are heated and lighted by electricity. The cost of constructing and equipping the road was \$100,000. The gross receipts for the first five months of traffic were \$13,000, which sum represents two hundred and sixty thousand fares—an average of seventeen hundred daily.

Four toll bridges, connecting St. Stephen and Milltown with Calais, were purchased and made free by the Province of New Brunswick and the city of Calais. All are wooden structures. Three of them have been put in thorough repair. The fourth, and the most important one, connecting Calais and St. Stephen, has been removed, and a fine steel bridge, resting upon solid stonework, has taken its place. Plans were made for a handsome and durable structure, which were faithfully carried out by the contractors. The whole cost of these improvements, shared equally by the province and the city, was about \$40,000. The immediate increase in the number of foot-passengers and vehicles crossing the river, especially over the bridge connecting Calais and St. Stephen, made it evident that this was a judicious expenditure of public money.

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**Swiss Silk Trade in 1894.**—Consul Germain, of Zurich, under date of January 5, 1895, writes:

At the close of 1893, it was pretty generally expected that the Swiss silk trade would materially increase and prove more profitable in the "campaign" of 1894. These expectations, however, have not been realized, except in a modest degree. While the factories have been working with full forces, and North America has again resumed sending large orders, the silk trade (except at times of slight flurry) has been a dragging one, and, on the whole, unsatisfactory. Large orders booked for America at the beginning of 1894 had the tendency to stimulate a better feeling, which, however, could not be maintained, and the tendency toward a decline again gained the upper hand, until the second half of February, when, owing to heavy purchases by manufacturers, prices became somewhat steady. For a few weeks thereafter prices remained tolerably firm, but the month of April again showed a downward tendency, which continued to May 15, when the lowest point of the season was reached. Re-

gardless of slight fluctuations, prices remained at this low level for about three months, but in the second half of August producers were enabled, supported by a mere speculative movement in Asiatic silks, to advance prices about 3 francs per kilogram (57.9 cents per 2.2046 pounds), part of which, however, was again lost before the close of the season, so that prices of Italian and Japan silks to-day have again reached the lowest point, while China silks are lower than has ever been known. For Italian spinners who have to figure on the basis of the lira, the advance in prices was completely lost, because exchange, which was 115 at the first half of the year, declined to 106 $\frac{1}{4}$ . In quantity, the Italian silk crop was but slightly under that of last year, notwithstanding the fact that, owing to the low prices of cocoons, a reduction in the production of the same was expected. The continued unfavorable weather prevailing in May, however, damaged the quality to a great extent, so that, with the poor returns from cocoons, quite a reduction in the silk output, as compared with last year's crop, was obvious. According to Chinese estimates, 60,000 bales of white silk are available for export, as against 55,000 bales last year; in Japan, 50,000 to 55,000 bales as against 50,000 bales last year, so that the shortage in Europe is counterbalanced by the larger crops of Asia. Considering that therein lay the great danger of Asiatic silk becoming a heavy competitor against European silks, the sharp decline in silver and the consequent low price of exchange have contributed still more to the present unsatisfactory state of affairs. The war between Japan and China has had but a small influence on business; even the expected advance in the price of exchange produced only a slight passing flurry. In consequence of their low prices, Japan silks have, in many places, crowded out the Italian article. Italian trams, especially, are now very much neglected; for China trams, the absence of the ribbon manufacturers as purchasers was heavily felt. Only of late have these buyers again, in a small way, become purchasers.

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**Prospect for Trade with the Falkland Islands.**—Consul Miller, of Port Stanley, Falkland Islands, writes to the Department December 20, 1894:

Since my arrival here, one thing has struck me as extraordinary—the complete absence of commercial relations between these islands and the United States. I believe, with the proper exercise of energy and enterprise, a change in this respect can be effected, quite beneficial both to our country and to this colony. There is no duty on imports here, except on tobacco and spirits. With the exception of a few articles from South America, everything brought here last year was from England and Germany in German steamers. Wool is the only export staple here. This year's clip approximates 10,000 tons. It is put up in bales of 500 pounds each. I think the recent changes in our tariff laws, especially as regards wool, afford a capital opportunity of establishing exchange commercial relations between this place and the United States. I have placed myself in communication with a gentleman of means and business here—a wool grower—and hope to induce him to make the experiment, and am authorized by him to correspond with New York merchants upon this subject, which I shall do. There can be nothing done this next year. The clipping is now over and the staple disposed of, but I think next season will bring satisfactory results to all concerned, provided I can effect this change in trade.

**Sumatra Tobacco Trade of Amsterdam**—Consul Downes, of Amsterdam, sends the Department a report on the Sumatra tobacco trade of that city, in which he says the history of the culture of tobacco in the island of Sumatra dates from the year 1864. In that year, the yield amounted to 50 bales,

the approximate total value of which was \$1,600. The marvelous success and increase of this culture from its inception to the year 1893 is clearly indicated by the following figures at the end of each decade:

Year.	Crop.	Price per pound.	Approximate value.
<i>Bales.</i>			
1864.....	50	\$0.14	\$1,600
1874.....	12,895	.544	1,140,000
1884.....	125,264	.526	10,900,000
1893.....	169,520	.524	15,040,000

The companies engaged in the cultivation of Sumatra tobacco number fifteen; besides these, there are ten companies in process of liquidation. Some of them pay large dividends. The oldest is the Deli Maatschappij, established in 1870, with a capital of 4,000,000 guilders. This company in 1884 declared a dividend of 77.5 per cent; in 1885, 107.5 per cent; in 1886, 108.5 per cent; and in 1887, 110 per cent; in 1888, the dividend fell to 45 per cent; in 1891, no dividend was declared; in 1892, 29 per cent; and in 1893, 51 per cent. **The company has a pension fund of 500,000 florins for the benefit of its employees in the island of Sumatra.**

The Tabaks Mattschappij Arendsborg, established in 1887, declared dividends as high as 152 per cent, but for some years no dividend was declared. Similar fluctuations in dividends are shown by the tables for other companies.

Besides these companies, there are private planters of tobacco in the island of Sumatra, but it is impossible to ascertain the amount of their capital invested, or the profits and losses thereon.

Sumatra tobacco was first exported to the United States in the year 1873. With the exception of a small sample lot in 1876 and one in 1877, the shipments of Sumatra tobacco to the United States were not resumed until the year 1880.

The following table shows the quantity of Sumatra tobacco, and the declared value thereof, shipped to the American market from 1873 to 1894, inclusive:

Year.	Quantity.	Value.	Year.	Quantity.	Value.
<i>Bales.</i>			<i>Bales.</i>		
1873.....	78	\$24,950.00	1887.....	35,199	\$5,825,86.77
1876 (sample lot).....		260.00	1888.....	15,321	3,827,980.30
1877 (sample lot).....		30.00	1889.....	42,397	6,478,195.78
1880.....	752	87,807.00	1890.....	48,182	8,251,939.42
1881.....	2,691	300,192.17	1891.....	11,645	873,246.56
1882.....	6,780	780,016.55	1892.....	32,926	4,573,702.06
1883.....	6,039	2,373,838.29	1893.....	12,418	3,711,406.52
1884.....	10,810	1,684,694.13	1894.....	35,022	7,517,029.19
1885.....	24,348	3,504,660.42	Total.....	312,671	53,061,601.30
1886.....	22,243	3,245,826.14			

**To Prevent Blowing of Sand.**—Consul Downes, of Amsterdam, writes to the Department January 26, 1895:

How do the Hollanders prevent the blowing and shifting of sand in sandy districts? This question, put by an American citizen, I have carefully investigated. Leading Dutch authorities on the subject suggest three means—(1) planting a kind of broom (botanical name *Arundo arenaria* or *Psamma arenaria*), which has for years been successfully employed on the dunes (sand banks heaved up by the ocean) along the west coast of Holland; (2) planting *Ammophila arundinacea*, or sea reed; (3) planting *Elymus arenarius*, or upright sea line grass. These are used successfully on the dunes, and also along the sandy banks of rivers. The fact that the sand may be salty does not prevent them from flourishing. While all these means prevent the blowing and shifting of sand in the damp climate of Holland, the authorities here are not yet certain that similar success will be attained in a dry and hot climate.

**A New Patent Brake.**—In a report to the Department, dated January 22, 1895, Consul Meeker, of Bradford, says:

A recent Bradford invention is the "Roberts Continuous Automatic Brake." Those interested in such matters assert that it is destined to become the most popular and effective brake ever invented. It is now on exhibition, in practical use, on a railway truck at Dudley Hill, near Bradford, where it is being constantly examined by railroad men and others interested in mechanics. Many encomiums are passed upon it, and I have not yet heard it criticised. I am informed that the managers of several of the English railway systems are discussing the propriety of adopting it. According to the inventor, it is an automatic continuous brake of great effectiveness, and, while applicable to all wheeled vehicles, is especially adaptable to railway rolling stock. The brake is protected by letters patent and by several patents for improvements of more recent date. The invention is also protected by patents in France, Germany, Switzerland, Austria, Italy, the United States, and Canada. The principle of the invention is the utilization of the weight of the body of the vehicle as brake power, whereby the brake becomes more or less powerful as the vehicle is loaded or empty. The brake is therefore self-acting and self-adjusting, and, without any manipulation, it applies the precise force required in all circumstances.

The invention has been successfully applied to ~~train~~ cars and lighter vehicles, but recently the inventor has given his particular attention to its application to railway goods trucks, and by the improvements effected he claims to have produced a cheap, reliable, and thoroughly effective brake of the most simple construction, whereby every truck in a train is under complete self-control. The principle is applied by means of levers inserted between the under carriage and the body of the truck, the pressure of the body on these levers putting on the brake. Thus, while the truck is at rest the full force of the brake is applied, and the truck will remain stationary on the steepest gradients known in this country. The levers inserted between the carriage and the body of the truck are connected in an extremely simple manner with the drawbar, and with one buffer at each end (and at opposite sides) of the truck, and the moment the locomotive exerts a tractive or propelling force on the train the levers are actuated, the bodies of the trucks are slightly raised, and the brakes are removed from the wheels of the trucks one after another until, when the tension or compression of the entire train is completed, the whole brake power is entirely removed. In addition to the connections between the brake and the drawbar and buffer, there is the ordinary lever at the side of the truck, whereby the application of the brake may be entirely removed when desired. Thus it will be seen that the brake's action is entirely independent of all outside control. When the train is stationary every truck has the full brake force exerted, and when moving backwards or forwards the brakes are removed. It follows that on any slackening of speed by the locomotive the brakes will gradually apply themselves until the train is brought to a stand-

still, or until the speed of the locomotive is increased. The driver is only required to manage his locomotive, and the train will of itself conform to the movements of the locomotive. Thus the train is completely self-controlled.

**Coal Trade of the Mediterranean.**—Consul Sprague, of Gibraltar, sends the Department, January 18, 1895, the following figures of the coal trade of Gibraltar and Malta:

*Sales by private companies.*

Year.	Gibraltar.	Malta.
	<i>Tons.</i>	<i>Tons.</i>
1890.....	487,073	529,000
1891.....	392,373	408,000
1892.....	293,438	362,500
1893.....	296,917	336,000
1894.....	277,533	410,000

The above table, adds Mr. Sprague, shows an increase during the past five years in favor of Malta over Gibraltar, where the sales of coal have decreased considerably since 1890. Algiers is becoming an important coal station, to the detriment of Gibraltar, since it offers greater facilities for coal- ing steamers in almost all weathers, while Gibraltar is without wharves where steamers could haul alongside to coal, and its bay is much exposed to southwest winds, which, at times, cause delays to the steamers requiring to coal. Following are statistics of cargoes received from New York at Gibraltar during the year 1894: Flour, 104,553 bags; tobacco, 598 hogsheads, 4,528 cases, 1,121 bales, and 538 boxes manufactured; florida water, 6,526 cases; petroleum, 29,700 cases; sarsaparilla, 25 boxes.

**Improvement of Belfast Harbor.**—Consul Taney, of Belfast, reports to the Department, February 11, 1895, as follows:

As it may be of some value to manufacturers in the United States of dredging machinery and kindred appliances, I take the liberty of calling the Department's attention to a contemplated improvement of Belfast harbor, which, if carried out in detail, will involve an estimated outlay of from \$500,000 to \$970,000. This improvement includes the excavation of a second or additional, channel for several hundred yards, the object of which is to open up a new section of the city water front, providing more dock room for quays and shipping purposes for the better accommodation of the growing commerce of the city, and the building of a swinging bridge. The estimated cost of the several items is: For dredging channel and reclaiming contiguous low-lying ground, \$440,000; for new docks, with about 2,750 feet quay frontage, \$310,000; for a swinging bridge to cross new channel, \$100,000; for pitching slopes of the channel, \$120,000. The last item may be excluded if it be decided the work can be dispensed with. By order of the harbor board, deputations have visited ports in France, Belgium, and Holland for the purpose of ascertaining the methods used in dredging, in order that the most improved and economic system may be employed in the prosecution of the work. Persons and firms caring to communicate with the authorities of Belfast on the subject should address their correspondence to the secretary of the harbor board.

**An Ice-Breaking Apparatus.**—Consular Agent Beneke, of Flensburg, Prussia, writes under date of February 14, 1895:

In consequence of the prolonged cold weather, Flensburg Bay has been frozen over since the 6th instant, but for a time it was possible for the tug *Adler* to force her way into the harbor. As the ice, however, became over 12 inches thick, the tug was obliged to give up. The Flensburg Board of Commerce then requested the Government to send their steamer *Sperber*, stationed at Sonderburg harbor, to Flensburg, as there are many cargoes (coal, palm nuts, corn, etc.), expected. This was achieved with the assistance of "Weedermann's Patent Ice Breaker." The following account was given me by the Government surveyor, who was on board:

"On the 7th instant, at about 9 a. m., we steamed from Sonderburg, having Weedermann's patent ice-breaking apparatus fastened to the bows of the *Sperber*. As far as we could see the Baltic was covered with ice, and in the Flensburg Bay the ice was over 12 inches thick. It was 22 English miles the *Sperber* had to pass, which the ice breaker easily accomplished, opening a passage for steam vessels. The speed of the *Sperber*, when at work, was about  $3\frac{3}{4}$  miles an hour, and, although ice 3 feet thick was occasionally encountered, the *Sperber* had only to stop five times and go astern to recover speed during the voyage, which terminated at 3.30 p. m., when we landed in the harbor of Flensburg. The invention has turned out to be of great service."

The ice breaker is built of steel and costs here about \$5,000. The apparatus has been patented in the United States since 1893.

Consular Agent Beneke transmits with his report a copy of the *Illustrirte Zeitung* of Leipsic and Berlin, containing an article on the apparatus, of which the following is a translation:

Mr. Weedermann, of Flensburg, has succeeded in constructing a machine by which every steamer may be transformed within a short time into an ice breaker without the vessel suffering the slightest damage. It floats alone, and is an oval and very flat device, the keel of which gradually curves up in front. The rear is split by a wedge-like indentation. In this indentation, the bow of the steamer is inserted, and the device is then securely attached to the vessel by means of chains and steel fixtures. When the steamer is in motion, the device, by being pressed forward, breaks the ice without the propelling vessel running the danger of impact or collision. The tests last winter were highly satisfactory. The Government tug *Sperber*, in a run of  $3\frac{1}{2}$  knots, with the device at its bow, broke through a sheet of ice 6 to 7 inches thick while obeying the rudder. These tests were made on the *Schlei*, in the presence of a representative of the Imperial Government.

**Goods in Bond for the Free Zone.**—The following law was enacted at the recent session of Congress:

[PUBLIC RESOLUTION—NO. 20.]

Joint Resolution In reference to the free zone along the northern frontier of Mexico and adjacent to the United States.

*Resolved by the Senate and House of Representatives of the United States of America in Congress assembled*, That the Secretary of the Treasury be, and is hereby, authorized and directed to suspend the operation of section three thousand and five of the Revised Statutes, in so far as the same permits goods, wares, and merchandise to be transported in bond through the United States into the free zone of Mexico, so long as the Mexican free-zone law exists: *Provided*, That nothing herein contained shall be construed so as to prevent the transporta-

No. 175—10.



tion of merchandise in bond to be delivered at points in the territory of Mexico beyond the limits of said free zone.

Approved, March 1, 1895.

The resolution took effect upon approval, but the United States Treasury ruled that merchandise already entered should be permitted to proceed to destination. The "free zone," or "zona libre," comprises a strip of Mexican territory about  $12\frac{1}{2}$  miles wide, extending from Matamoros, on the Rio Grande, along the United States frontier to the Pacific. Within this territory goods destined for use there pay only 10 per cent of the Mexican import duties. The avowed object was to foster the growth of towns along the Mexican border.\*

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**Market Reports from the Argentine Republic.**—Mr. W. I. Buchanan, United States Minister to the Argentine Republic, informs the Department, under date of Buenos Ayres, January 2, 1895, that he has endeavored to secure printed official market reports on agricultural products in the Argentine Republic, but found it impossible to do so. He adds:

Appreciating the importance of the subject, I deemed it proper to have prepared forms for sending to the Department of Agriculture the market reports of this country every two weeks. I inclose copies of blanks and have to advise that the reports have been regularly forwarded to the Department of Agriculture, beginning November 1, 1894. I hope the work will merit your approval and prove of benefit to our farmers and producers.

Copies of the blank form referred to are inclosed in Mr. Buchanan's dispatch. They give the market quotations for the two weeks ending —, prepared by the United States legation at Buenos Ayres. Prices are the average on the total reported sales in the markets of Buenos Ayres for the above period. The average gold rate is stated. The articles are wheat, corn, flax, alfalfa, wool (cross Lincoln, Rambouillet, Criollo, and lambs'), sheepskins, and live stock, including fat and medium steers, fat and medium cows, sheep (Lincoln wethers, Rambouillet-Lincoln wethers, and common). Space is left for general information upon the weather, crop prospects, wool, sheep, cattle, horses, and miscellaneous.

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**Swiss National Exposition.**—Consul Ridgely, of Geneva, sends the following to the Department under date of January 26, 1895:

Having received several individual requests from manufacturers in the United States for information concerning the Swiss National Exposition to be held at Geneva in 1896, I consider it advisable to notify the Department that this exposition is to be a national, not an international exposition. Only the products of Switzerland and of exclusively Swiss industries will be exhibited. The exposition promises to be unique in many respects, and will be signalized by an unusually large and ingenious electrical display. It will be held from the 1st of May to the 15th of October, 1896. In view of the requests for information above referred to, it would, perhaps, be well through the medium of CONSULAR REPORTS to notify American merchants and manufacturers that only Swiss exhibits will be received.

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\*See CONSULAR REPORTS No. 133 (October, 1891), p. 206, and No. 160 (January, 1894), p. 23.

**Phosphate Deposits of Algeria.**—Consular Agent Le Coat, of Bone, Algeria, writes to the Department, under date of January 25, 1895, as follows:

In July, 1894, I sent to Mr. Grellet, the consul at Algiers, a special and detailed report on the mining of phosphates in Bone.\* The report described the grade of the phosphates, the character of the deposits, etc. Several proprietors came to my office and asked if I could introduce them to some American firm desirous of investing money in this trade or of becoming proprietors of phosphate mines. Presuming that information to this effect may be of value to the American trade, I call the Department's attention to the subject, with the suggestion that the names of business men who are disposed to enter into relations with our people here may be forthcoming. I may add that two English firms have taken steps in this direction and are realizing profits from their enterprise. They are Messrs. Crookston, Bros. & Co., and Messrs. Jacobson & Co.

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**An International Postage Stamp.**—Consul Morris, of Ghent, writes to the Department February 6, 1895:

Referring to a previous report upon a proposed international postage stamp, printed in CONSULAR REPORTS No. 171 (December, 1894), p. 526, I have just read an article in the daily newspaper to the following effect: Upon the initiative of the German postal authorities, negotiations have been opened by the German Government with the other members of the international postal union relative to the issue of the stamp. Almost all the various countries, except the United States, have, in principal, assented to this project. An official conference of the powers interested will soon be called to discuss the bases of the proposed measure. Among other advantages not mentioned in my previous report would be the great facility offered by such a stamp for the payment of small bills and accounts in foreign countries.

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**Treaty Between Belgium and Paraguay.**—In a dispatch to the Department, dated Buenos Ayres, January 4, 1895, Minister Buchanan says:

I was informed yesterday by the Belgian minister at this capital that the treaty of commerce on the "most-favored-nation" basis, signed in February, 1894, by his Government and that of Paraguay, had been ratified at Asuncion on December 8, 1894.

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**Baltic and North Sea Canal.**—In view of the opening of the Baltic and North Sea Canal, which is to be attended with imposing ceremonies arranged by the German Government, on the 20th of June next, the description of the canal by Consul Johnson, of Hamburg, published in CONSULAR REPORTS No. 129 (June, 1891), p. 209, is of special interest at this time.† The legislation for connecting the Baltic with the North Sea was enacted in 1886. The first spadeful of earth inaugurating the work was turned by Emperor William I at Hottenuau, near Kiel, on the 3d of June, 1887. The canal is 98.6 kilometers (61.27 miles) in length. It begins at Holtenau, on the Bay

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\* See "Phosphate Deposits of Algeria," CONSULAR REPORTS No. 170 (November, 1894), p. 365.

† See, also, "North Sea and Channel Ports," CONSULAR REPORTS No. 172 (January, 1895), p. 32.

of Kiel, and terminates near Brunsbüttel, at the mouth of the River Elbe, thus running clear through the province of Schleswig-Holstein from north-east to southwest. Both openings are provided with huge locks. Near Rendsburg, there is a third lock connecting the canal with the old Eider Canal. The medium water level of the canal will be about equal to the medium water level of Kiel harbor. At the lowest tide the profile of the canal has, in a depth of 6.17 meters (20 feet 6 inches) below the surface of the water, a navigable width of 36 meters (118.11 feet), so as to allow the largest Baltic steamers to pass each other. For the navy, 22 meters (72.18 feet) of canal bottom are provided, at least 58 meters (190.29 feet) of water surface, and 8½ meters (27 feet 9 inches) depth of water. The greatest depth for merchant vessels was calculated at 6.5 meters (21 feet 3 inches). The estimated cost was \$37,128,000. Two-thirds of the cost is defrayed by Germany; the remaining one-third by Russia. The time saved by a steamship sailing from Kiel to Hamburg via the canal, instead of through the Skaugh (the strait between Jutland and Sweden), is estimated at 2½ days. The time of passage through the canal, including stoppages and delays, will be about thirteen hours. In time of peace, the canal is to be open to men-of-war, as well as merchant vessels of every nation, but in time of war, its use will be restricted to vessels of the German navy. Many vessels have been wrecked and many lives lost on the Danish and Swedish coasts, in waters which need not be navigated after the canal is opened to traffic. Its strategic importance to Germany will also be great, as it will place that country's two naval ports, Kiel on the Baltic, and Wilhelmshafen on the North Sea, within easy access of each other.

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Climate of the Orange Free State.—United States Consular Agent E. R. Landgraf, of Bloemfontein, reports under date of January 1, 1895, that, since the publication of his report in CONSULAR REPORTS No. 154 (July, 1893), wherein the climate of the Orange Free State was recommended to those suffering from pulmonary troubles, he has been in receipt of communications from persons in the United States asking for additional information. Mr. Landgraf says that a Mr. Patterson, of Halifax, upon reading an extract from his report as published at the time in the Nova Scotia papers, started immediately for the Free State. On the passage out Mr. Patterson met, on board the steamer, a farmer who invited him to stay at his place.

The following is an extract from a communication from Mr. Patterson to Consular Agent Landgraf, dated May 23, 1894:

I have been on a farm here since January, and in that time have manifested every sign of improvement, gaining over 13 pounds in weight and enjoying a splendid appetite and an abundance of spirits. Now that the influence of returning health comes to me, and the feeling of depression and hopelessness has given way to those of buoyancy and ambition, I am able to look with grateful appreciation to the means by which my thoughts were first turned

to South Africa as a health resort. "Great oaks from little acorns grow," and perhaps that newspaper article was the means of saving my life.

Consular Agent Landgraf further says:

No country on earth can rank with the Orange Free State as a health resort. Mr. Patterson had been all over the world and nowhere else found any relief. I could give numbers of similar cases, and that so few people have come here is due to the fact that the Orange Free State is so little known, and in most parts of the world believed to be a desert, inhabited by brutal natives and wild beasts. The country is pretty well populated and cultivated. Living is rather expensive, and persons coming here should command from \$50 to \$60 per month. A family of four or five persons can live decently on \$1,500 per year.

Persons whose lungs are far gone should travel by stages from the sea to the Orange Free State—that is, such persons should stay for a month at Ceres, next at Beaufort West, etc., until they are prepared to stand the dry climate of the Orange Free State. A direct journey to Bloemfontein would mean death to such persons. The landing place is Cape Town.

**American Raisins vs. Greek Currants**—Consul Germain, of Zurich, reports March, 1895:

It may interest American raisin growers to learn that lately, Greek currants have considerably advanced in price. The increase is from 80 to 210 drachmas (\$15.44 to \$40.53) per 1,000 pounds. Currants for a few years past have been a drug upon the markets of the world, and sold so low in America that the article came into direct competition with the lower grades of American raisins, so that United States growers could hardly find a market for this line of their products. Owing, however, to the advancing price of currants, brought about by the marketing of the old accumulations, together with the fact that last year's currant crop was very light and that the new tariff imposes a duty of 1½ cents per pound on currants imported into the United States, a better market for American raisins may be looked for. Russian newspapers learn from their Athens correspondents that the heavy supplies of Greek currants are finding their way into Russia, where they are being extensively introduced, and seem to find much favor. This was brought about by a syndicate of Patras exporters who, early in the season, sent a representative to Russia with instructions to canvass the trade and try to create a demand for the heavy Greek product. How well he succeeded, the advance in prices, as above shown, illustrates. The markets of France and England, where stocks of currants are at present very low, have, sympathizing with the recent advances in Greece, also considerably improved. Should this newly created Russian demand be maintained, and go on improving, Greek agriculturists, as well as American raisin growers, may look forward to better times.

**Consular Reports Reprinted Abroad.**—The Board of Trade Journal, of London, for March, 1895, contains the following reports reprinted in whole or in part from CONSULAR REPORTS: On page 277, "California Wines Judged by French Experts," by Consul du Bellet, of Rheims, CONSULAR REPORTS No. 172 (January, 1895), p. 120; on page 289, "Sierra Leone, Its Commerce, Population, etc.," by Consul Pooley, of Sierra Leone, CONSULAR REPORTS No. 169 (October, 1894), p. 240; on page 316, "Modifications of the Italian Tariff," by Consul-General Jones, of Rome, CONSULAR

REPORTS No. 173 (February, 1895), p. 289; on page 324, "Changes in the Peruvian Tariff," by Minister McKenzie, of Lima, CONSULAR REPORTS No. 171 (December, 1894), p. 521; on page 348, "Sugar Interests of Cuba," by Consul-General Williams, of Habana, CONSULAR REPORTS No. 169 (October, 1894), p. 252; on page 348, "Lumber Trade of the Straits Settlements," by Consul-General Pratt, CONSULAR REPORTS No. 169 (October, 1894), p. 282; and on page 351, "Special Tax for Railways in Ecuador," by Minister Strobel, of Quito, CONSULAR REPORTS No. 171 (December, 1894), p. 510.

**Consular Reports Transmitted to Other Departments.**—The following reports (originals or copies) were transmitted during the month of March to other Departments for publication, or for proper action thereon:

Consular officer reporting.	Date.	Subject.	Department to which referred.
Wallace S. Jones, Rome .....	Feb. 5, 1895	Climatology of Italy.....	Weather Bureau.
Louis H. Brühl, Catania.....	Jan. 12, 1895	Oranges and lemons in Sicily..	Department of Agriculture.
William H. Seymour, Palermo..	Feb. 28, 1895	.....do.....	Do.
Charles L. Adams, Cadiz.....	Dec. 19, 1894	Olive crop of Spain.....	Do.
Do.....	Dec. 13, 1894	Sherry vintage of Spain.....	Do.
Samuel E. Morss, Paris.....	Nov. 30, 1894	Apple crop of France.....	Do.
Charles de Kay, Berlin.....	Oct. 29, 1894	Apple crop of Germany.....	Do.
Patrick A. Collins, London.....	Oct. 29, 1894	Apple crop of Great Britain....	Do.

## FOREIGN REPORTS AND PUBLICATIONS.

**British Trade in the Far East Threatened.**—The London Times, February 18, 1895, says:

The statements made before the Royal Colonial Institute last week by Mr. Whitehead, and supported in a weighty speech by Mr. Leonard Courtney, do not form pleasant reading. Alike from the specialist view of the exchange banker and from the national view of the English statesman, they tell the same tale of the decay of British trade in the East, and the supersession of British manufactures by the rising steam industries of India and Japan. It is rather cold comfort (and the position must indeed be serious when such consolation could be offered) to be assured by Mr. Courtney "that the world at large, after all, was greater than Great Britain; and if we were to yield the privilege of supplying the wants of nations to those who had been in rivalry with us, we must accept what was for the benefit of mankind." That was the conclusion to which Mr. Whitehead's facts and figures pointed, and which Mr. Courtney's rigid honesty of perception compelled him to face. It is a conclusion which bears, not upon one or another department of industry, but on all European manufactures which are being, or can profitably be, produced by the new steam-using nations of the East.

Nor is it one that depends on a single cause. Mr. Courtney avoided the error of some of the speakers, who dwelt almost exclusively on the currency aspects and on the supposed bi-metallic remedy. But throughout the discussion there was a tendency to pass lightly over the economic causes which underlie the situation. Independently of questions of currency and tariffs, Great Britain is now beginning to feel the rivalry of the new steam-using countries of Asia for substantially the same reasons as she began to feel the rivalry of Belgium and other European competitors in the middle of the century. India and Japan are reconstructing their industrial system on the basis of steam power and the cooperation of labor and capital on a great scale. The same mechanical force and the same industrial methods which gave British manufactures the monopoly of the Asiatic markets are now, when adopted by Asiatic producers, destroying that monopoly. The relation of gold to silver is a most important factor, but the treatment of the question assumes an air of unreality when it is put forward as the sole or even as the fundamental cause.

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It seems probable that India can manufacture her home-grown cotton with her own coal and her cheap labor at a lower cost than England can manufacture imported cotton of the same staple, subject to the demands of trade unions and the contingencies of strikes. It is certain that the profits of the British producers of the higher qualities of cotton goods have also been diminished. Their distresses have been aggravated by currency difficulties, but not entirely caused by them.

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Mr. Whitehead gives a clear and not inopportune warning that the case of Manchester does not stand alone among the industries of Great Britain. In some respects, Lancashire has fared better than other centers of British production in the competition with the new steam-manufactures of the East. "Turning to the jute manufacture," writes Mr. Whitehead, "we find that about thirty years ago nearly the whole of it centered in Dundee, whereas now about one-third is conducted on the banks of the Hugli, near Calcutta. The removal of this trade from our shores has been most detrimental to British interests." "Tin-mining has attained large proportions in the Straits, the production having recently increased about 15 per cent per annum." "The tin mines in Cornwall and Australia will have to submit to this

competition at whatever disadvantage to themselves. If we turn to any other industry, the Asiatic races are enjoying a similar advantage over their western competitors. In the case of coal, of which Japan has a very large supply, we find that several large steamship companies have contracted for hundreds of thousands of tons of Japanese coal to be delivered in Singapore at a price, allowing for 20 per cent inferiority in quality, of 13s. per ton, against 20s., which is the price of Welsh coal at the same port. "As Sir Thomas Sutherland recently remarked at a meeting, there may be some gentlemen present who will live to see Peninsular and Oriental steamers built on the Yangtse, in China, instead of on the Clyde, the Tees, and the Tyne."

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**British Expansion in South Africa.**—The visit to England of Mr. Cecil Rhodes, premier of Cape Colony, and of Dr. Jameson, administrator of the British Chartered Company's territories in South Africa (Mashonaland and Matabeleland), has excited much interest in Great Britain in the more recent developments of the policy of expansion of the South African holdings of British colonists. According to the London Times of January 29, 1895, Dr. Jameson, in an address at the Imperial Institute, gave a sketch of the history and present status of the colonial movement to the northward from Cape Colony. Bechuanaland, the scene of Livingston's great work, was first secured (in 1885) as a Crown colony, with a protectorate under England to the twenty-second parallel; then, through the efforts of Mr. Rhodes, Matabeleland and Mashonaland were acquired, and territory 2,000 miles in length, to Lake Tanganyika, was added to the territory controlled by British subjects. "This huge addition to the Empire," Dr. Jameson said, was "an accomplished fact." The territory referred to has been named Rhodesia, in honor of Mr. Rhodes. "In Rhodesia," says Dr. Jameson, "we have a country nearly as large as Europe—a liveable country, a country where white men and women can live, where white children can be reared in health and vigor. Mr. Rhodes told the shareholders of the company a week ago that we have a highly mineralized country. I told them, and I say again, now, that we have a highly 'payable' country. \* \* \* It has been proved \* \* \* that we have iron almost universally distributed throughout the country. Recently, south of the Zambesi, we have discovered several coal beds spread over a large area." Dr. Jameson also spoke highly of the agricultural and pastoral capabilities of the country. During the past four years, added Dr. Jameson, 1,300 miles of telegraph have been built, and 300 miles more are in course of construction. "We have already built and established four brick townships, with all the necessary Government offices, and with a staff of considerably over 100 white civil-list officials. This is exclusive of over 250 white police, which are now increased with a view to the recent extension of our administrative area up to the southern end of Lake Tanganyika." At one of these townships—Bulawayo—there were 1,900 white inhabitants in August last, and 600 of the recent Matabele enemies were making bricks for houses—"a quiet and peaceable body of citizens." Dr. Jameson represents the Matabeles as satisfied with the change and "thankful the past régime is over." A thousand

miles of roads have been built in the territory, connecting all the townships and the outlying gold fields with the centers. The railway from the east coast has been carried to Chimoco, only 230 miles from the capital (Salisbury). From the south, the railroad has been completed to Mafeking, and Dr. Jameson predicts that in three years there will be complete railway communication between Cape Town and Bulawayo. Dr. Jameson is a strong advocate of the commercial federation of the South African colonies. He includes in the scheme "a combination of Cape Colony, Orange Free State, and Rhodesia, with Natal possibly lukewarm and only the Transvaal inimical, and the Transvaal, with a population of nearly 50,000 Englishmen and Cape Colonists equally desirous with us as against a population of about 15,000 Boers opposed."

The London Times of February 4, in announcing the departure of Mr. Rhodes and Dr. Jameson for South Africa, stated that early during their stay in England, Mr. Rhodes concluded an agreement with the Imperial Government by which Dr. Jameson's powers as an administrator will be extended across the Zambesi to the south end of Lake Tanganyika, "and his authority established throughout a tract of country as great in extent as central Europe." "Mr. Rhodes," adds the Times, "has not obtained the full acceptance of his proposal to link this vast province commercially with Great Britain by the insertion of the clause forbidding the imposition of protective customs duties upon British goods, which he had desired to incorporate with its constitution, but he has done much both privately and publicly to insure the eventual comprehension by the British public of the object at which he aims." "'Free trade with the Empire and the right reserved to act as circumstances may render necessary towards foreign countries,' is the definition which he is himself ready to give of the policy he is prepared to pursue."

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**Commercial Expansion of Germany.**—The Glasgow Herald, of March 2, 1895, contains an article on the "Commercial Expansion of Germany," in which it says the meeting of the commercial congress in Berlin is not, perhaps, receiving so much attention in Great Britain as it deserves. Its importance may be inferred from the fact that it represented with no uncertain sound the opinion of commercial Germany on the subject of commercial treaties in opposition to the Agrarian Party, and also the protest of traders and financiers against interference with the gold currency in the proposal of the Reichstag for an international conference with a view to the adoption of bimetallism. "Of all the industrial countries of the world," says the Herald, "Germany is now recognized as our most formidable competitor—until the United States wakens up to free trade." Continuing, the Herald says:

The economic policy, or new course of policy, which the treaties reflect, may be said to have begun with the treaties concluded with Austria-Hungary, Italy, Belgium, and Switzerland in 1891, which were followed by treaties with Spain (unratified), Roumania, and Servia,



and to have culminated in the famous Russo-German treaty of last year. This Russian treaty has been called the crowning stone of the monumental work of economic policy, from which, however, it must not be rashly concluded that Germany has now concluded all the commercial treaties she wants. Now, this treaty work has not only had important effect on the industrial and commercial affairs of Germany—it has had great influence on the condition of several continental states. In the case of Spain the results are somewhat complicated, but in the case of Servia, for instance, Germany has scored an advantage over Austria-Hungary, which previously occupied a preferential position in Servian commerce. Before the conclusion of the recent treaty, the commercial intercourse between Germany and Servia was very small; now it is steadily growing. So with Roumania, where, until recent years, Austria-Hungary had the bulk of the trade, but where Germany now has the first place, sending chemical products, colors and varnishes, woodwork, glassware, iron goods, cutlery, textile fabrics, and sugar, and receiving back cereals, dried fruits, animals, and animal products. Other treaties were concluded with Egypt, Colombia, etc., but it is the treaty with Russia that has had the most marked results, economically and politically. What has been termed the discovery of Count Caprivi—that Germany has passed from the position of an agricultural state to that of an industrial state of the first rank—has made a considerable difference in the distribution of political parties in the Empire. Under the new policy a bitter conflict has arisen between the Agrarians, as representing the old school, and the Industrials, as representing the new. The Agrarians have entrenched themselves behind the bulwark of the Farmers' Alliance, which has grown and strengthened wonderfully within the last two or three years. And the especial object of attack and detestation of this party is the Russo-German treaty, with regard to which it was at one time vehemently declared that the farmers would rather let their bones bleach on their fields than agree to it. Nevertheless, the treaty was confirmed by the Imperial Diet, and the Government have had to seek other means of pacifying the Agrarians, who still form a troublesome force to be reckoned with. What, then, have the commercial treaties in general, and the Russo-German treaty in particular, done to affect the economic situation? They have, in the first place, facilitated and cheapened the supply of breadstuffs for Germany, and have encouraged the export of industrial products by reducing the customs impediments abroad; and, in the second place, they have provided security for protective surpluses and established a sort of customs stability in Europe for a term of years.

That the conclusion of the Russo-German treaty gave a great impetus to certain German industries there is, in the opinion of the Herald, no doubt. What the permanent effects will be, remains to be seen. "At present," adds the Herald, "the industries, and especially the agricultural industry of Germany, are fully as prostrate as our own."

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**Overproduction of Beet Sugar.**—The British ambassador, Sir Julian Pauncefoot, transmits to the Department a copy of a circular by the West India Committee, of London, dated January, 1895, concerning sugar production. In his letter of transmittal, Sir Julian explains that the circular is not to be considered as an expression of opinion by the British Government, but simply as a statement emanating from this committee. The circular states that it is well known that the sugar industry, beet, as well as cane, is at present undergoing a crisis of the most serious description, and that in any attempt to provide a remedy it is important that the various governments whose interests are concerned should avoid taking steps which, if ill-

advised, may aggravate the crisis instead of relieving it. The total production of the world is given as follows:

Description.	1881.	1885-86.	1890-91.	1891-92.	1892-93.	1893-94.	1894-95.
	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>
Beet sugar.....	1,630,000	2,223,000	3,770,000	3,501,000	3,428,000	3,895,000	4,975,000
Cane sugar.....	2,200,000	2,140,000	2,500,000	2,784,000	2,760,000	3,046,000	2,904,000
Total.....				6,285,000	6,188,000	6,941,000	7,879,000

Thus, while the beet-sugar production has increased from 2,223,000 tons in 1885-86 to 4,975,000 tons in 1894-95, the cane production has only increased from 2,140,000 tons in 1885-86 to 2,904,000 tons in 1894-95. The total production of 1894-95 shows an enormous increase over that of 1893-94—nearly 1,000,000 tons, due to increased production of beet sugar. During recent years, the consumption of the civilized world has continued at an annual increase of about 250,000 tons. The excess of beet production for 1894-95 was sufficient to provide for four years' increase of consumption at the above rate. This overproduction has had the effect of depressing prices from 12s. 6d. (\$3.04) per cwt. for what is known as beet 88 per cent analysis, which is taken as a relative standard of selling value, to 8s. 8d. (\$2.09) per cwt. in 1895. The circular attributes the overproduction in great part to the bounties granted by European governments with a view to stimulating the sugar industry. The price, it states, has been reduced to a point which does not represent the cost of production. The circular estimates that the increased crop of 1894-95 has resulted in a loss to the sugar industry of £1,250,000 (\$6,082,500). The annual contribution on the basis of the present bounty by various foreign governments is estimated at £4,290,000 (\$20,875,140); besides this, a considerable bounty is obtained from the taxpayers direct under the system of duties and drawbacks adopted in some countries. The circular concludes that the total cost to the taxpayer of the bounty system is £5,000,000 (\$24,330,000) per annum, with the result of an enormous loss to the sugar industry. It advocates, therefore, the abolition of the bounty system altogether as likely to produce a more natural condition of the industry and lead to a reduced crop of beets being sown. The next remedy, in the opinion of the committee, is an increased consumption, and to obtain this, a reduction of the import duties on sugar by European countries is advocated. In Europe, generally, says the circular, the duties levied on sugar are so exorbitantly high that sugar is an article of luxury to the masses, with the result that the consumption is on an extremely small scale, as compared with Great Britain and the United States, where sugar is largely consumed by the general population.

**Sugar Beets in Australia.**—The subject of sugar-beet cultivation is receiving attention in the colony of Victoria, Australia, and the Department

has received a printed copy of a report to the Victorian Parliament upon this subject. The report states that for some years past the conviction has been gaining ground that the colony is eminently suited for the beet-sugar industry. Practical experiments with the growth of sugar beets have been carried on in the colony for more than thirty years past, and continued experimenting by the agricultural department has been attended with material success. The highest sugar percentage in Victoria in beet roots during the season 1893-94 was 22.5 per cent of roots produced by private growers, with an average of 18.1 per cent for samples from Government experimental patches. The results obtained have led the agricultural chemist to the conclusion that the industry is one of the most naturally suited to Victoria.

The production of sugar from sugar cane in Queensland and New South Wales in 1893 was 96,146 tons, and the total consumption in the seven colonies of Queensland, New South Wales, Victoria, South Australia, West Australia, Tasmania, and New Zealand was 158,319.35 tons, so that the shortage which had to be imported from foreign countries has amounted to 62,173 tons. The report concludes that there is ample inducement for increased sugar production in Australia.

Climatic conditions preclude the raising of sugar cane in Victoria, but, as stated, the colony is thought to be suited in the highest degree for the growth of the sugar beet.

**A Defense of French Consuls.**—Under the heading "Our Consuls and the Export Trade," the Review of Foreign Commerce (*Revue du Commerce Extérieur*) of Paris, of February 23, 1895, says:

Some of our merchants and their officious upholders are always complaining of the inactivity and indifference of the consuls. They are ever protesting, "French commerce is not enlightened." Only those who protest with the greatest energy take good care not to read the consular reports and have seldom set foot out of France. Those who formerly traveled and sometimes had no reason to praise our consuls, do not know what a transformation of manners and habits has taken place in the consular personnel.

Stimulated by circulars and by ministerial orders, our agents feel their honor to be enlisted. They study commercial questions in the market and regularly communicate their observations to their departments. *Le Bulletin Consulaire* of former times has been replaced by a multitude of separate, small pamphlets, which supply valuable information on the commercial situation of foreign countries and on the practical means of spreading French products abroad. Do the merchants read these reports with more zeal than the *Moniteur Officiel Commercial* or the old *Bulletin Consulaire*? We greatly doubt it.

"Read the consular reports," said one of them; "why, I have hardly time to run over my *Figaro*." Such a one will adopt the opinion of another in speaking ill of our consuls.

Meanwhile, our consuls travel in France. They render an account of the result of their observations. They know that M. Hanotaux imposes on them the obligation of giving oral information to the French merchants regarding the means of developing the national exportation within the province of their jurisdiction. And this obligation stimulates them to work and to direct study. Some of them go even further. They engage foreign merchants to make their purchases in France, and we can not resist reproducing the letter which one of our man-

ufacturing friends received recently from an Austrian merchant who was entirely unknown to him, and even wrote to him in German :

" FIUME, February 11, 1895.

" MR. M. : The French consul in our town has kindly forwarded to me the address of your house. He warmly recommended it to me in presenting to me one of your price lists. Therefore, although I have hitherto obtained my articles from Italy or Germany, if yours suit me better I would be disposed to get them exclusively from your house.

" Be good enough to send me a sample of all your varieties. I will pay for them immediately on receiving them.

" Can you at the same time send me a pattern of your Nos. 1 to 4. I will send you an order if these articles are salable in our market. Awaiting a prompt dispatch.

" M. O."

The letter is authentic. We have only translated it into French, suppressing the denomination of articles asked for and the address of the recipient.

We will not give the name of the consul ; he is not named in the letter. But with such examples—this being, doubtless, not an isolated one—it is difficult to suspect the zeal of the personnel of our consulates.

Their efforts are not always crowned with success, but the relations and usages of our commerce must also be taken into account. Sometimes they are irreconcilable with those of foreign purchasers.

At all events, it would be well to renounce the everlasting complaints of the indifference of consuls in regard to the commercial interests of France.

**California Wines from a French Standpoint.**—The *Revue du Commerce Extérieur* of Paris, of February 23, 1895, contains the following article :

The vintage in California for the year 1894 will have had but indifferent results. The quantity of wine obtained this year is valued at only 60 per cent of the quantity obtained in 1893 ; it would be about 12,600,000 gallons, as against 21,600,000 gallons in 1893 (of which 17,000,000 gallons were dry wines and 4,000,000 gallons sweet wines and cordials). The quality of the last vintage is equally inferior.

Since the new tariff lowering the entry duties on wines imported into the United States from abroad, great efforts have been made in California to organize powerful syndicates whose duty is to be to struggle by every possible means against foreign competition, especially against the competition of French wines. It is not that the quantity of disposable wines or pecuniary means are wanting ; but owing to the antagonism arising among the producers on one side and the agents on the other, \* \* \* this enormous engine of industrial war does not seem ready to operate for a good while yet.

In looking over the last annual report of the State Viticultural Board of California for the years 1893-94, the conclusion is arrived at that the wine-growing industry of California has been for several years in a state of stagnation, that there has been an excess of production, that the price of wine has never been lower, although the improvement with a view to increase the consumption and open new markets for it have been constant and real.

**Prohibitive Measures Against American Products.**—A correspondent writing from New York to the *Revue du Commerce Extérieur* of Paris, under date of February 15, says :

The prohibitive movement in Europe, coincident, if not concerted, against certain American products, notably cattle and beef, is marked. The last action of this kind was taken by

Belgium, which has closed the port of Antwerp to American cattle and butchers' meat. This is an important fact, for a good portion of the New York exports to Switzerland and Austria passed through Antwerp. This forbids access of the American food products to that section of the European hinterland. In France, a recent consular report shows there is a desire to limit, but not to prevent, the importation of American meats. These regulations following the pronounced prohibitions declared in Germany and Denmark, and the measure taken by Spain in regard to the duties on North American flour, seem to indicate a general movement in Europe against the food products of the United States, of which they were, until now, one of the chief riches. This movement is, without doubt, due to the protection it is proposed to grant to agricultural products in the different European countries, but it is not the less significant, and the economic and commercial independence of which the United States has always boasted must, apparently, soon become a myth.

**Foreign Trade of the United Kingdom.**—The following statistics showing the imports and exports of the United Kingdom for the month of February, 1894 and 1895, and totals for the two months January and February, 1894 and 1895, are compiled from British official returns:

*Imports and exports during February, 1894 and 1895.*

Articles.	1894.	1895.	Increase.	Decrease.
<i>Imports.</i>				
Live animals (for food).....	\$2,447,780	\$2,370,994		\$76,786
Articles of food and drink:				
Duty free.....	51,763,439	42,150,231		9,613,208
Dutiable.....	8,849,381	7,923,571		925,810
Tobacco, dutiable.....	843,983	893,744	\$49,761	
Metals.....	7,440,085	6,339,196		1,100,889
Chemicals, dyes, and tannins.....	3,510,707	3,018,832		491,875
Oils.....	2,481,324	1,966,287		515,037
Raw materials for textiles.....	42,361,620	32,852,188		9,509,432
Raw materials for other industries.....	11,867,074	9,123,838		2,743,236
Manufactured articles.....	26,895,071	26,161,533		733,538
Miscellaneous articles.....	6,596,079	3,782,932		2,813,087
Parcel post.....	309,779	317,648	7,869	
Total.....	165,366,262	136,900,994		28,465,268
<i>Exports.</i>				
Animals, living.....	\$122,842	\$177,234	\$54,392	
Articles of food and drink.....	3,444,753	2,911,874		\$532,879
Raw materials.....	7,443,943	5,306,509		2,137,434
Manufactured and partly manufactured goods:				
Textiles and yarns.....	42,323,480	39,198,666		3,124,814
Metals and manufactures of.....	10,302,334	8,817,062		1,485,272
Machinery and millwork.....	4,959,466	4,676,056		283,410
Apparel and personal articles.....	3,830,569	3,454,154		376,415
Chemicals and chemical and medicinal preparations.....	3,388,965	2,985,174		403,791
All other.....	9,884,072	9,760,694		123,378
Total manufactures.....	74,688,886	68,891,806		5,797,080
Parcel post.....	\$321,915	\$414,568	\$92,653	
Total British goods.....	\$86,022,339	\$77,701,991		\$8,320,348
Foreign and colonial goods.....	24,588,270	23,032,226		1,556,044
Total exports.....	110,610,609	100,734,217		9,876,392

*Imports and exports for January and February, 1894 and 1895.*

Articles.	1894.	1895.	Increase.	Decrease.
<i>Imports.</i>				
Live animals, for food.....	\$4,777,596	\$4,681,001		\$96,595
Articles of food and drink :				
Duty free.....	107,244,020	99,920,054		7,323,966
Dutiable.....	18,384,274	17,415,702		968,572
Tobacco, dutiable.....	1,696,550	2,000,876	\$304,326	
Metals.....	15,843,521	14,145,228		1,698,293
Chemicals, dyes, and tannics.....	7,223,269	5,940,959		1,282,310
Oils.....	5,718,878	5,259,966		458,912
Raw materials for textiles.....	100,185,402	79,689,071		20,496,331
Raw materials for other industries.....	25,258,969	22,259,882		2,999,987
Manufactured articles.....	52,027,888	53,819,463	1,791,575	
Miscellaneous articles.....	14,544,625	9,665,122		4,879,943
Parcel post.....	600,537	944,214	343,677	
Total.....	353,505,529	315,741,598		37,763,931
<i>Exports.</i>				
Animals, living.....	\$236,103	\$362,563	\$126,460	
Articles of food and drink.....	7,283,052	6,470,847		\$792,205
Raw materials.....	15,807,429	11,673,685		3,133,744
Manufactured and partly manufactured goods :				
Textiles and yarns.....	85,521,497	84,066,502		1,454,995
Metals and manufactures of.....	20,412,982	18,712,550		1,700,432
Machinery and millwork.....	9,667,413	10,232,871	565,458	
Apparel and personal articles.....	7,874,755	7,263,415		611,340
Chemicals, chemical products, and medicinal preparations.....	6,895,984	6,209,712		686,272
All other.....	19,949,523	20,566,235	616,712	
Total manufactures.....	150,322,154	147,051,285		3,270,869
Parcel post.....	\$704,096	\$822,743	\$118,647	
Total British goods.....	\$174,352,834	\$166,381,123		\$7,971,711
Foreign and colonial goods.....	45,296,863	40,364,088		4,932,775
Total exports.....	219,649,697	206,745,211		12,904,486

**The Hungarian Commercial Museum.\***—The Hungarian Commercial Museum, says the *Revue du Commerce Extérieur* of February 23, 1895, has just published its summary report of operations for the year 1894, and we here give some of its principal figures:

The cash operations amounted to 146,027.69 florins (\$59,287.24) of receipts and 141,009 florins (\$57,249.65) of expenditures. The permanent exposition, which has been dissolved for two years, during which the exhibitors will be absorbed by the works of the millenium exposition of 1896, has effected 2,980 sales, for the most part the products of private industry (*industrie en chambre*). The sales represented but 21,481 florins (\$8,721.29), inasmuch as the institution limits itself, for most of the time, to placing the purchasers in direct relation with the producers. It is the same with the branch establishments and agencies that the museum maintains in the East; these put themselves at the disposition of the Hungarian exporters, whose products they introduce to the foreign markets and to whom they furnish all information desired, the manufacturers having the option to treat with customers either directly or through

\* See CONSULAR REPORTS No. 174 (March, 1895), p. 453.

the representative agency. The sales made in 1894, through agencies, amounted to 1,050,017.20 florins (\$426,304.98), and were distributed in the following different markets :

Markets.	Amount.	
	Florins.	
Fiume (Mediterranean).....	34,485.95	\$14,001.30
Bosnia :		
Sarayero.....	230,127.97	93,325.94
Mostar.....	181,050.10	73,506.34
Banjaluka.....	45,328.83	18,403.50
Bocka.....	28,821.93	11,701.70
Belgrade.....	126,837.92	51,496.20
Bucharest.....	78,831.42	32,005.56
Roostchook.....	45,376.22	18,422.75
Sophia.....	128,726.89	52,263.12
Philippopolis.....	53,141.09	21,675.28
Constantinople.....	13,604.87	5,523.58
Salonica.....	83,684.01	33,975.71
Total.....	1,050,017.20	426,304.98

The Hungarian Commercial Joint-Stock Company has discounted notes amounting to 222,408.83 florins (\$90,297.98) on the basis of the sales to be effected by these agencies.

In the course of the year 1894, the Hungarian Commercial Museum arranged an exposition of electric machinery (*machines outils électriques*), at which 22 Hungarian manufactories, 11 Austrian, and 11 foreign exhibited 187 machines moved by electricity with 83 motors. There were 182,743 visitors at this exposition, of whom 46,117 were pay visitors and 3,500 manufacturers, in parties, from 113 provincial towns.

At the exposition and bazaar of work done in the homes of the manufacturers (*l'industrie en chambre*) which the museum prepared in December and January last, there were 114 exhibitors, whose products represented a total value of 33,567.69 florins (\$13,628.48). A third of these products was sold during the month of December, when the exposition had 13,208 visitors.

The bureau of information of the Commercial Museum has furnished gratuitous information to 1,257 persons, natives and foreigners equally. The information sought was as follows: Customs or tariff questions, abstract of statistics, complete lists of supplies, and consumers of divers articles; proposals, legal questions, etc.; prices of transportation. This bureau has charge of editing the organ of the Hungarian Commercial Museum (*Magyar Kereskedelmi Múzeum*), which appears every Wednesday and is distributed gratis to 4,000 persons. In the reading room of the bureau, 2,805 persons have consulted the works and special journals of the library of the museum.

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*Vol. 11 (1894).*—"American Lumber in Foreign Markets."

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